MAY 1953

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The Cover Picture

In order to make the good earth more productive, Monsanta scientists turned Dr. Charles A. Thomas' idea into Krilium. See article on page 6

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for men who manage

DECENTIFIED OF STATE

Highlights

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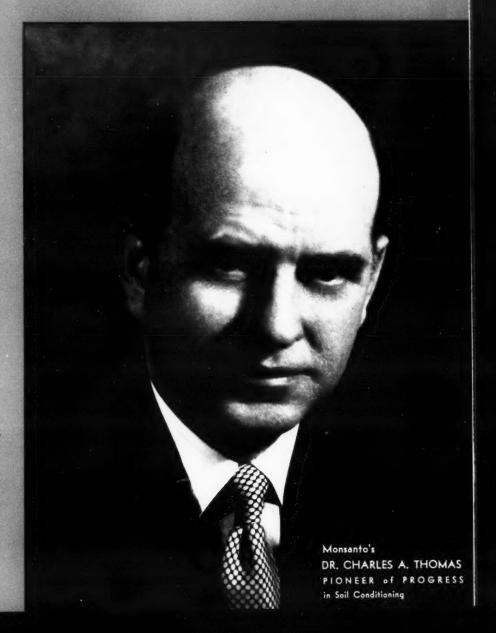
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"That's Interesting"

Converts sunlight into chemical energy

A chemical reaction that uses light energy to convert water into an explosive mixture of gaseous hydrogen and oxygen has been discovered by Lawrence J. Heidt of the Massachusetts Institute of Technology. Although only one-tenth of one percent efficient, it is hoped that the method can be improved and developed into a large-scale process for turning sunlight into chemical energy.

As reported in the Scientific American the method employs a solution of ceric (plus-four valence) and cerous (plus-three valence) ions. Geric ions absorb light energy, react with water, are oxidized to ceric ions and release hydrogen. Ceric ions also absorb light, and in so doing are reduced to the plus-three state and release oxygen.

At 250° Fahrenheit it's a long trip

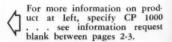
The world's longest, single-flight conveyor belt is functioning between the coking plant and blast furnaces at U. S. Steel's Fairless Works, Morrisville, Pa. Built by Goodyear Tire & Rubber Co., the rubber and rayon fabric belt carries coke registering about 250°F and weighing 30 lb/ft on the belt. Measuring 5500 feet from the center of head pulley to the center of tail pulley, the belt has a rated capacity of 400 tons/hour.

Device spurts hot water from cold tap

Thermojet is a faucet water heater, which offers a continuous source of "warm to very hot" water when attached to a cold water faucet. Made by Home-Aids Co., New York, N.Y., the device is guaranteed to be a safe faucet water heater and operates from any standard AC outlet.

No more mugging?

A shaving brush that carries its own cream has been developed by the Nu-Way Appliance Corp., Los Angeles, Calif. The lather cream is dispensed directly through the bristles of the brush, which has a threaded base for screwing onto the end of any standard size shaving cream tube.





(CHEMICAL PROCESSING PREVIEW) For MEN WHO MANAGE

Vol. 16

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May, 1953

No. 5

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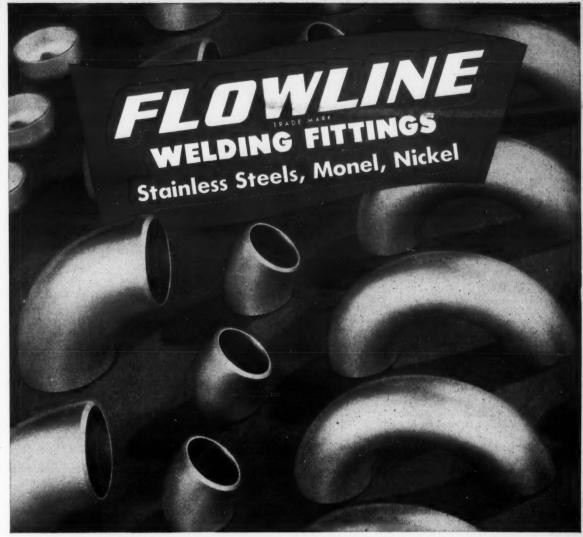
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FLOWLINE Welding Fittings—ells, tees, stub ends, reducers, and caps—are normally stocked at strategic points in Schedules 10, 40, and 80 (Schedule 5 also available)—sizes ½" through 12"—in stainless types 304, 316, and 347; Monel and Nickel. They are annealed, cleaned bright—stainless fittings are passivated—and marked with type of metal, heat number, size, schedule, and wall thickness.

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taking time out to ask questions

This month thousands of persons responsible for handling of industrial materials will be attending the 5th National Materials Handling Exposition. That such annual ventures wise investments is an axiom of our Industrial Age. In this particular instance, it is another step to find easier, more economical ways of handling more goods.

On the day when primitive man shifted his cargo from the backs of beasts to a crude wheel, handling of materials resolved itself into two issues: 1) employment of more and more machines, and 2) selection of fewer machines to meet particular needs.

The various equipment to be exhibited represents man's effort to solve the first problem; and at the same time, each type of equipment is offered as a possible solution to a particular problem.

Competent evaluation of materials handling takes on added emphasis in view of rising production costs. Use of equipment on a gigantic scale is not necessarily indicative of the wisest choice. (In some industries as much as 80 per cent of the overhead is spent on moving material to and fro. One equipment manufacturer contends that through a proper analysis of materials flow this cost can be cut by 50 per cent.)

Not being job evaluators, we do not challenge his figure, but we do strive each month, through our pages, to show how certain companies have reduced their materials handling costs appreciably.

In the sense of reporting simpler, faster, and more economical methods of materials handling, we share the aims and spirit of the exhibition in Philadelphia. We'll be there personally to ask questions and to be asked. See you then.

Karl Beliekoff

ASSISTANT EDITOR

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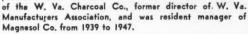
"Management Participation Sparks the Safety Program"

This editorial has been written at the request of the editors of CHEMICAL PROCESSING . . . and is authored by

MARLIN G. GEIGER, Vice Chairman of the Board and Director, The Davison Chemical Corp.

Born on November 15, 1897, in Harrisburg, Pa., and took his degree at Pennsylvania State College. From 1921 to 1947 he occupied the successive positions of chemical engineer, foreman, assistant manager, resident manager, vice president, and director.

Mr. Geiger is the former vice president and director of United Chemicals, Inc., former president and director



In addition to his service with Davison, he is presently vice president and director of G. Ober & Sons Co., Sylox Corp., and the Southern States Industrial Council.

Mr. Geiger is a member of the American Chemical Society, American Institute of Chemical Engineers, and the American Association for the Advancement of Science.

"MANAGEMENT" is a term which at safety meetings usually refers either to managers who are directly concerned with production and with safety problems as such, or to all those down the line who are in directive positions. What I have to say deals mainly with the opportunities and obligations of top management - those who determine the policies of the organization.

There are many reasons why this level of management should be interested in the safety program. In the broadest sense, safe operation is good public relations. To be known as a safe place to work is a long step on the path to becoming known as a good place to work. In these days, it is the company's obligation to be a good member of the community, to be interested in the well-being and health, not only of its employes, but of all the people in the area in which it operates.

You might say that a chemical company has more than the ordinary obligation to make safety a primary objective of top management. Investment in safety at Davison has been heavy but the rewards have been more than in proportion. Direct benefits to management are not confined to improved employe relationships. We have found cash benefits in substantial amount. In the last four years, we have received \$82,000 retrospective return premium from insurance companies on a premium that had already reflected our good experience. That took care of a good sized bite of costs directly ascribable to the safety program. Moreover, we have learned that a safe plant is one with good housekeeping, which contributes to efficiency, low costs, quality products,

(Continued on page 221)



ING

What's eating your stainless steel tanks?

For more than a quarter century Metal Glass Products Company of Belding, Michigan has specialized in the manufacture of stainless steel tanks for all phases of the processing industries. In that time they have come to know the advantages and limitations of stainless

steel fabrications for industry. The design engineers at Metal Glass realize that stainless steel is not the cure-all to corrosion and wear that many believe it to be. They know that there are many acids, salts and organic substances that will attack stainless steel tanks. They realize that special care must be taken in every step of installation and fabrication to keep their tanks unaffected when used with various liquids. The performance of the units in ac-

tual plant operation depends to a large extent upon the manner in which the installation was made and

the daily treatment accorded the

equipment.



For these reasons Metal Glass attempts to make every unit a custom built model. Even the standard items illustrated in this article are precision built. Despite the care exercised in building standard units, there are many applications that call for a specially designed piece of equipment. It is in cases like these that it pays to call on Metal Glass. Our engineers working with your personnel can de-

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PROGRESS PIONEERS OF



DR. CHARLES A. THOMAS

For the past 150 years and more, philosophers have wondered bow the earth's increasing millions would feed themselves . . . this tribute is paid the men of Monsanto Chemical Company for their development of . . .

KRILIUM: Agriculture's Infant Today -A Keystone of Well-being Tomorrow

MALTHUS can't be blamed for his gloomy pre-dictions of the early 1800's — he had never encountered a chemist-farmer bent on doing something about Nature's shortcomings. Dr. Charles A. Thomas, president of Monsanto, is just such a man. While director of the company's Central Research Department way back in 1941, he was bothered by a corn crop on his farm near Dayton. Parts of the field bore well, but others produced spindly, dwarfed plants despite normal care and fertilizing.

Probably the number of farmers who have worried about this situation is in the thousands, but Dr. Thomas was a chemist as well as a farmer . . . and inquisitive. Therefore, when tests showed no real difference in chemical analysis of the good and bad parts of the field, he turned to the question of soil structure.

Texture vs Structure

It's important to note that agricultural scientists mean very different things by the two terms "soil texture" and "soil structure." Texture of a soil is an analysis. It is concerned only with how much sand, silt, and clay the soil contains. Structure of a soil is a little harder to pin down; it has to do with the "looseness" or tilth. Soil specialists at Monsanto and elsewhere wish there were an easy way to express soil structure in numbers, but aside from the concept that it is controlled by the aggregate size, structure is almost as hard to measure and describe in numbers

But if low production of parts of the field were due to poor soil structure, Dr. Thomas reasoned, it might be possible to do something about it with a chemical structure improver. Actually, Nature manufactures a set of such materials. They are called polyuronides gumlike materials - and they come from decaying leaves, manure, or other organic matter. While they last in the soil, they hold the aggregates (or individual crumbs of soil) intact and separate from other

crumbs. But while Nature is giving polyuronides to the soil with one hand, she's taking them away with the other . . . bacteria in the soil make short work of these natural gums and heavy clay soil tends to revert to clay unless applications of humus or peat moss are continuous. Alternate sun and rain hasten the process. If two heads are better than one, certainly two farmer-chemists were more apt to find an answer to the problem. Dr. Thomas interested his friend Dr. Carroll A. Hochwalt, associate director of Central Research and also an Ohio farm-owner, in the soil problem. (Dr. Hochwalt is now vice-president in charge of Monsanto's research and development.)

These were the two men who got the project underway. But the final startling results were ten years and a lot of hard work later.

Furor in Philadelphia

December, 1951 — the American Association for the Advancement of Science was meeting in Philadelphia. Technical papers were delivered on CRD-189, and CRD-186, better known now as Krilium. Results of prolonged tests had been available to Monsanto since June of that year and on the basis of these results, it was said that Krilium " . . . is 100 to 1000 times more effective in improving soil structure than compost, manures, or peat moss "

In the same meeting, it was pointed out that for the immediate future Krilium would find its most probable use in gardening, greenhouses, and truckfarms. Despite this, the significance of this material was obvious by 1975 it is estimated that the United States will need 100,000,000 more acres of farm land than it now has under cultivation. And the United States is far better off for arable land than most countries.

But something else that was said sounded like the 2 which added to 2 makes 4 . . . Monsanto mentioned

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the phrase "hydrolyzed polyacrylonitrile*." Dozens of companies who were making such products (paint thickeners and other specialties) jumped on the bandwagon and a circus parade of products got underway. Gardeners, interested by publicity and reputable names and claims, were treated to (in some cases) not-so-reputable claims for a whole series of "iums" and "otils."

All of which put Monsanto in a spot. The company had not figured on marketing soil conditioners before 1953 - and then in small quantities. But they did make Krilium available in 1952. They went on to win the basic soil conditioner patent (No. 2,625,-529). And they now license 57 companies producing reputable soil conditioners.

Behind the Scenes

Much of the interval from the original view of the problem to the Philadelphia announcement was warenforced idleness. When the hubbub died, Hochwalt contacted Professor J. H. Quastel of McGill's Biochemistry Department. Not only did this meeting clarify ideas, but fortunately made Quastel's soil study techniques available for work on the problem. With some place to get a grip on soil conditioning, work was now turned over to Monsanto's Central Research Division.

Even at "CRD" work remained in the hands of chemists who knew something about farming. Dr. Mel Hedrick, an Illinois farm boy not too many years before, and Dr. David Mowry began learning new things about soil. Getting proper soil structure was a cinch, they found a spade or harrow would do it. Keeping a good structure stable, though, was where a soil conditioner came in. One good rain could reduce a well-tilled field to a solid gunk which dried to stone hardness. As Hedrick said, "Seeds planted there . . . break their necks."

This was the period of long intensive projects and progress in fits and starts. Among the men who examined new compounds and tested them were Dr. "Nick" Samaras, Dr. Robert Ruehrwein,, Dr. Earl Gluesenkamp, Dr. Lloyd Sherwood, and Dr. Reid Fordyce. Sherwood set up the "technical cooperators" system which put several hundred scientists at universities, experiment stations, etc. to work on tests of conditioners. Fordyce was concerned with problems of erosion control and his work with state highway departments has resulted in a one-shot spray machine which lays down Krilium, grass seed and fertilizers.

A surprising amount of time was devoted to testing and retesting. Conditioners were tested from one end of the country to the other before news of the development was released. And test plots conditioned with CRD-186 (Krilium) and CRD-189, had been under observation for $2\frac{1}{2}$ years when the announcement was made in Philadelphia.

While Krilium is still largely a home garden product, there are indications of what is to come. Monsanto has already announced a liquid product to be shipped in drum lots. Here is a conditioner designed for application by farm machinery. That conditioners

(Continued on page 223)

This referred to CRD-189. "Krilium," 30 to 75% more effective than 189, was and is CRD-186.

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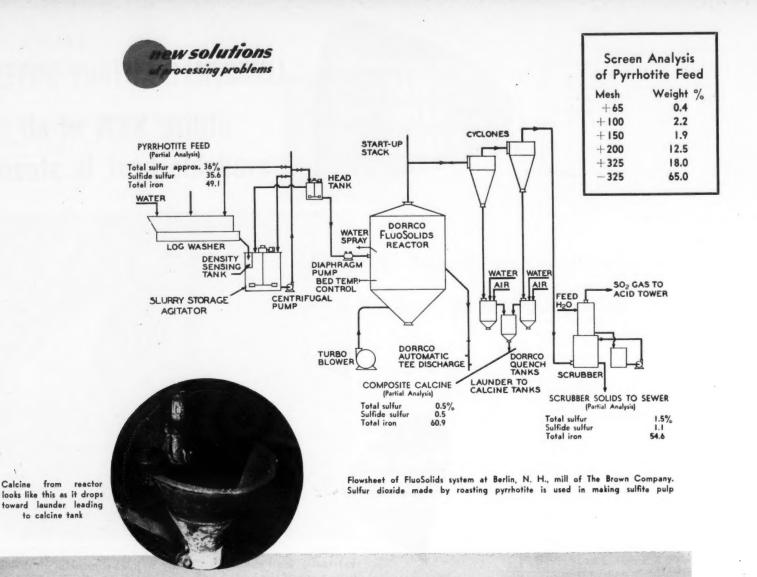
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Offices in all principal cities

In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario





Copper Tailings Now Sulfite Pulp Mill's Sulfur Source; Capacity Production of Pulp Assured

But trick is in fluid bed reactor which supplies SO₂ gas high enough in strength to be used in mill's existing system for preparing acid PROBLEM: Due to the severe sulfur pinch of recent years, The Brown Company faced the prospect of having to cut back production of sulfite pulp at its Berlin, N. H., mill. The mill had been burning about 16,000 tons of sulfur (brimstone) per year in making the sulfur dioxide used in the acid-making operations.

Looking for other potential sources of

sulfur, the company located one about a hundred miles away from the mill. The Vermont Copper Company was discarding copper tailings carrying an iron sulfide, pyrrhotite, and could and would concentrate it by flotation, to a 35% sulfur content, if Brown would buy it.

Unfortunately, usual methods of roasting the pyrrhotite would give gas

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Gas from reactor goes through two-stage, four-cyclone dust collection system at left, then through Peabody scrubber at right

strengths of 10 to 11% SO₂, which would mean that extensive, costly changes would have to be made in the process for preparation of the bisulfite acid cooking liquor. (Gas made by burning brimstone had an SO₂ concentration of 16 to 17%.) Existing equipment could be used for preparing the liquor, with minor alteration, if SO₂ concentration were above 12%.

Solution: In the spring of 1952, Brown started up a roasting process in which the pyrrhotite is roasted in a fluidized bed. The set-up is depicted graphically in the accompanying flowsheet. It is designed to roast 75 tons of pyrrhotite per day (dry basis), using an average figure of 35% sulfur in the pyrrhotite feed. At present, however, it is burning 80 to 85 tons per day. By operating close to the theoretical oxygen requirements, a black magnetite (Fe₃O₄) calcine is produced.

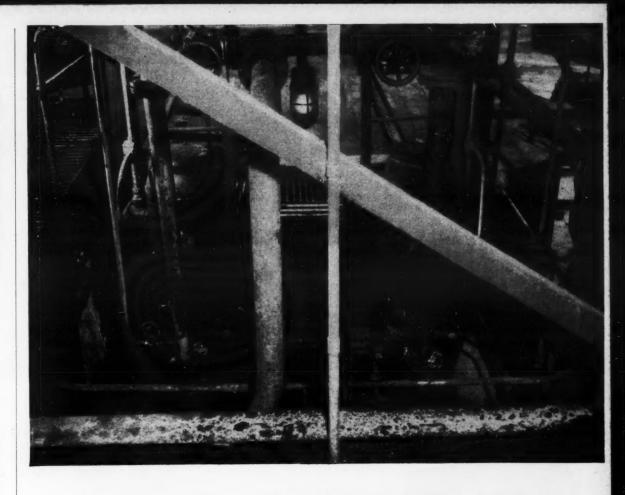
Pyrrhotite feed is received as a filter cake containing 10% moisture. Screen analysis is given in accompanying table. The cake is repulped to a controlled density of 70 to 75% solids in a log washer, and then put into an agitated slurry storage tank which holds about six hours of feed. A centrifugal pump at the bottom of the tank continuously recirculates the slurry feed to any or all of the following three places: the log washer, the slurry storage tank, and the head tank. During operation, of course, feed is always recirculated to the head tank.

The agitated head tank holds approximately 20 minutes of feed. Slurry from the tank feeds by gravity to an Oliver ODS diaphragm pump, which feeds the reactor. A typical slurry density (73% solids) is 2.3, and such a slurry would be pumped to the reactor at about 8½ gallons per minute.

Reactor Operated at 1600°F

The FluoSolids reactor is 16' ID, is operated with a 5' deep fluid bed, and at a temperature of 1650°F. Bed level is held constant by means of a "FluoSeal" discharge overflow pipe. All calcine (roasted material) except that leaving the reactor with the gas goes out through this discharge.

(Continued on next page)



Another Case of "MORE OF THE SAME"

The LaBour Type G pumps in this picture have been in service a little more than three years, handling ammonium sulphate saturated mother liquors. Some time ago we shipped additional pumps of this type to the same user, and as this is written, more of the same are on order.

When a company has had years of experience with a piece of equipment, and continues to buy

more and more equipment from the same maker, there can be only one answer. Most of the business LaBour enjoys today comes from customers who have had previous experience with LaBour pumps, some dating back 25 years and longer.

If you're looking for the kind of dependable pump service that makes you want more of the same, you'll get it from LaBour.

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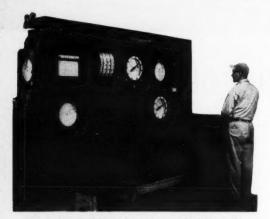
(Continued from preceding page)

Bed is fluidized at a space velocity of about 1 fps by a turbo blower delivering close to 3500 cfm at 3.5 psi. A horizontal perforated plate distributes the air uniformly over the whole cross-sectional area of the reactor.

Since the reaction is highly exothermic, something must be done to carry the excess heat away. Otherwise, the solid iron oxide, which predominates in fluid bed, would be heated to the fusion or sticking point. At Brown, a controlled amount of water is introduced at one point in the bed. The amount of water is controlled according to bed temperature, which is thus kept constant. So accurate is this control that temperature will not vary more than 20°F throughout the whole bed volume involved.

Dust carried from the bed with the gas is collected by a two-stage, castable-lined hot cyclone system, each stage consisting of two cyclones in parallel. Then, the small amount of dust remaining (about 3% of total calcined solids) is washed out of the gas in a Peabody scrubber. The scrubber also serves as a cooler: outlet gas is held at 105°F by automatic control of the water.

The dust caught by the cyclones is collected in four individual quench tanks. Combined water requirement for the tanks runs 60 to 70 gpm. Quench water containing the collected dust is transferred by means of an air lift to a main



Operation of fluid bed reactor is checked at this instrument panel in the Brown mill

header. This header leads to a firebrick-lined launder into which the overflow calcine (from the reactor) is introduced. From there, the combined flows are sluiced into the calcine tanks. This calcine is stored at present, later will be used for steel making operations.

Note that the iron-containing calcine is removed from the gas while hot, and above the temperature where SO3 would be formed. Iron oxide is wellknown as a catalyst for converting SO2 to SO8. Of course, the SO3 formed would combine with the moisture present to form sulfuric acid . . . and that means corrosion. As an extra safeguard, inside surfaces of ducts and cyclone collectors are kept above the sulfuric acid condensation temperature.



Here's Why **Allis-Chalmers** Complete **Pumping Unit Is**

Allis-Chalmers Type APKK explosion-proof motor. Fin-type design with no enclosed passages for external cooling air. Cannot clog and overheat. If cleaning is required, it takes only a few minutes with cloth, brush, vacuum or air hose. All cast-iron frame resists corrosion, Similar design available in totally-enclosed, fan-cooled motors for non-hazardous locations.

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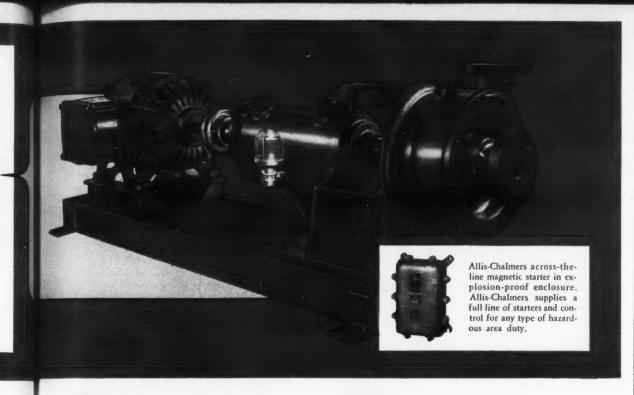
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When inquiring check CP 1006 on handy form, pgs. 2-3

No provision is made at Brown for recovery of heat from the system. However, waste heat boilers and/or heat exchangers are practicable wherever economically justified.

Results: Gas strength, sampled after the scrubber, is around $12\frac{1}{2}\%$ SO₂, strong enough so that existing equipment for making the cooking liquor can be used. The reactor itself is producing a gas containing above 13% SO₂, but some of the SO₂ is absorbed in the scrubber water going to the sewer. Typical analysis of pyrrhotite feed and calcine are shown on the flow diagram. From these, it can be determined that recovery of sulfur, as SO₂, from the feed is 98.8%.

Operating labor, exclusive of concentrate and calcine handling, amounts to one man per shift. Power consumption is estimated at 66 kw/ton of sulfur. The system is very easy to operate and control, and can be quickly adjusted to meet varying capacity conditions. The system at Brown has demonstrated its flexibility in meeting demands from 60 to 120% of design capacity.

Quick start-up after a weekend shutdown is another important feature of the system. Brown was able to put theirs on stream half an hour after a 77hour holiday weekend. Shutdown of the reactor was accomplished simply by pushing buttons on the feed pump and blower motors, and closing the manual valve on the temperature-control water. Since bed lost heat very slowly over the weekend, it was still hot enough to permit combustion Monday morning. Hence, SO2 production started as soon as feed and air were introduced into the bed. Automatic control devices are being used in other FluoSolids systems to adjust the feed rate to hold a desired gas strength. Main operating variables are the rate of air flow and rate of feed introduction, both of which can be brought under remote control by suitable instrumentation.

The gas cleaning and cooling system is doing a highly satisfactory job for Brown. The Berlin mill has a stringent specification for its bleached sulfite pulp, and at no time since installation has an offgrade product been made.

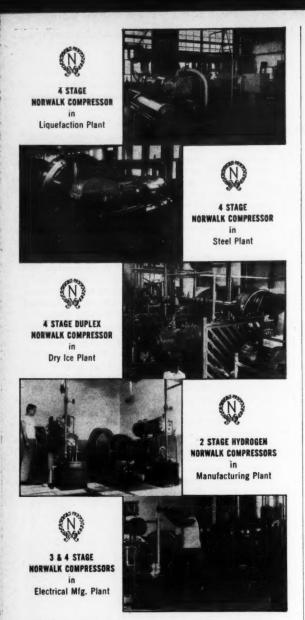
(FluoSolids systems are designed and built by The Dorr Company, Dept. CP, Barry Place, Stamford, Conn. . . or for more information check CP 1007 on handy form, pages 2 and 3.)

Corrosion section in June issue -

Although CHEMICAL PROCESSING carries a number of articles on corrosion every month, the June issue will include a separate section on corrosion prevention and control. It will contain material from the most pertinent of the 44 technical papers presented at the recent National Association of Corrosion Engineers Conference and Exhibition in Chicago, as selected by our Editors. Some highlights of the Exhibition, as well as articles on how individual corrosion problems have been successfully solved in chemical plants will also be included.

51

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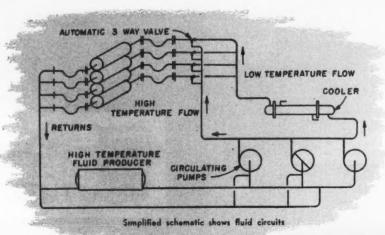
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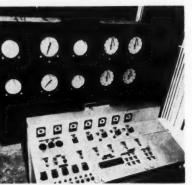
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When inquiring check CP 1008 on handy form, pgs. 2-3





How Plastic-calender Rolls Are Maintained Within ½ of 1°F Over Whole Surface



Control panel used at Goodyear to control calenders for vinyl sheet

Hot water under pressure replaces steam and cold water formerly used

T EMPERATURE requirements of calender roll surfaces in the plastics industry are critical. Frequently, temperature variations over an entire roll surface must be held within 3°F. In addition to this, adjacent rolls must sometimes be held at temperatures ranging from 5 to 100°F difference. Sometimes, too, the question is one of cooling rather than heating, because friction of the sheet at 100 to 150 yards per minute generates more heat than is needed.

A calender designed for one set of conditions may work well within its range, but radically different conditions may mean steep capital expenditures since calenders for the different conditions have to be installed also.

Changing the mode of temperature control has resulted in a calender which may fill the bill in a great variety of plastic work. It maintains close control of temperature up to 400°F — and can be built to go to 1000°F if a demand for calender temperatures that high develops. Small change that made the big difference is use of hot water under pressure rather than steam and cold water combination formerly used.

High-pressure steam and cold (room temperature) water provides satisfactory heating and cooling of

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the rolls in many cases. High calender speeds, however, usually make this type of temperature control impossible. And it has disadvantages even in its optimum range: collecting and draining off condensate, use of two mediums complicates control picture, automatic switchover from heating to cooling cannot be achieved.

Schematic illustration shows a system being used for processing sheet vinyl at Goodyear Aircraft Corporation at Akron, Ohio. Since maximum temperature is 400°F, they are using hot water under pressure. Two circuits are incorporated in the system; one passing through a heat source, the other through a cooler. Circuits carry water of different temperature. Before entering calender, these streams are mixed in accordance with heat demand of the calender roll.

In the Goodyear installation, an electronic recording controller measures roll temperature by means of a copper-constantan thermocouple installed in water line next to the roll. Controller's pneumatic output regulates three-way valves controlling admission of hot water to the roll. Roll temperature is held within ½ of 1°F.

A system for processing temperatures up to 1000°F would differ only in minor points. Hot water, of course, would be replaced with a heat-exchange fluid.

(Hot water system was designed by American Hydrotherm Corp., Dept. CP, 33-70 12th St., Long Island City 6, N. Y. Instrumentation for system was engineered by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . or for more information check CP 1009 on handy form, pages 2 and 3.)

End packing damage in low-temp operation by synthetic lube . . .

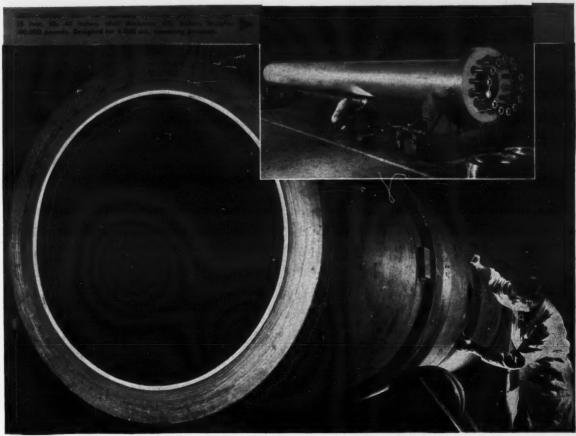
ice crystals can't adhere to pump push rods so packing lasts 15 times as long

Problem: Packing life in reciprocating pumps handling low-temperature hydrocarbon liquids at a large chemical company was very short. Ice crystals adhered to the pump push rods and tore the packing. Lubricants used were conventional petroleum type.

Solution: Change-over to synthetic lubricants was tried. Reason for this was that the synthetics have low stable pour points, and show little change in viscosity with changes in temperature (viscosity indexes range from 135 to 155, and some range as high as 180).

Results: Packing life has increased 15-fold since using synthetic lubricants. Ice crystals cannot adhere to the push rod thus lubricated, and as a result packing damage is eliminated.

(Ucon synthetic lubricants are a product of Carbide & Carbon Chemicals Division of Union Carbide & Carbon Corporation, Dept. CP, 30 East 42nd St., New York 17, N. Y. . . . or for more information check CP 1010 on handy form, pages 2 and 3.)



One of the shell courses for this multi-layer vessel. The end view shows the $\frac{1}{2}$ " thick inner cylinder of stainless steel, with the thinner steel plate wrappings around it scarfed for welding.

A.O. Smith MULTI-LAYER process gives chemical industry safe vessels for

Nitrogen Expansion Program

Many full scale vessels have been tested to destruction to prove the safety features of Multi-layer construction.

The high pressures of 4,000 to 15,000 psi, needed in the ammonia and urea synthesis process are completely met by the patented A. O. Smith multi-layer process.

As the name implies, multi-layer vessels are built up from concentric layers of relatively thin steel plates progressively wrapped, tightened and welded together around a pressure-right cylinder. This means that vessel walls can be built up to the thickness demanded by the pressures required for the process. In the remote event of run-away overload, fragmentation of vessel walls is practically impossible due to the nature of multi-layer construction.

Automatically Vented—Only the inner cylinder of a multi-layer vessel need be pressure tight. The outer layers are provided with vent holes. In applications involving

hydrogenation, venting prevents embrittling attack on the load-bearing layers.

Besides complete safety, you get these added features with multi-layer vessels.

BETTER DELIVERIES because multi-layer construction uses more readily obtainable thin steel plates.

CORROSION IS NO PROBLEM: Only the inner cylinder need be made of the spec-

ified alloy for the corrosion service. This saves expensive critical materials because the load bearing portion of the vessel wall-not in contact with corrodents-is manufactured of more economical steel plate.

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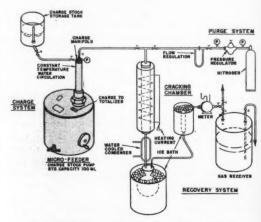
When inquiring check CP 1011 on handy form, pgs. 2-3

Ounce-and-a-half of gas-oil poses tough pumping job on half-hour test . . .

catalyst evaluation tests in 20 x 1-inch diam "kitten" cracker now 95% satisfactory

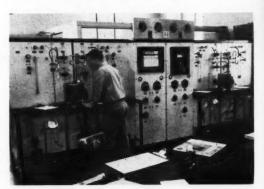
Problem: One of the important problems at Sinclair Research Laboratories, Inc., in Harvey, Illinois, is testing and evaluating new cracking catalysts. Cat cracker system has been scaled down so that cracking tower is heated tube twenty inches by one inch in diameter. Preheated gas-oil is forced through this tower at a low rate and products are collected to evaluate catalyst.

Trouble developed because downflow of oil through catalyst tended to pack the column and raise



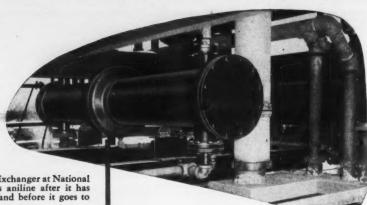
Schematic shows components of catalyst test system

pressure drop across the bed. Even though a "positive displacement" reciprocating pump was used, back pressure did not permit constant flow rate of the 42.5 grams of oil over 30 minute test period. Since test was followed by approximately three and a half hour regeneration cycle and calculat-



Operator is able to check feed rate or he may preset it accurately

For more information on product advertised at right, specify CP 1013 . . . see information request blank between pages 2 and 3.



 ADSCO Heat Exchanger at National Aniline sub-cools aniline after it has been condensed and before it goes to storage.

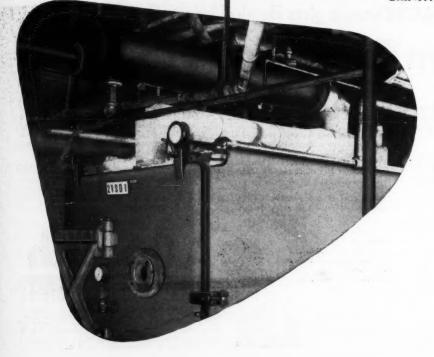
WHERE A HEAT EXCHANGER MUST BE GOOD

 ADSCO Heat Exchanger (insulated) above vat drier at National Aniline condenses organic acid vapor in tubes with water or brine in shell. Exchanger equipped with shell expansion joint. The ADSCO Heat Exchangers shown on this page are installed in the Buffalo, N. Y., plant of the National Aniline Division of Allied Chemical & Dye Corporation. The manufacturing processes of National Aniline require engineered equipment of the highest caliber. . . ADSCO, in business since 1877, offers the chemical processing industry a complete line of carefully-engineered heat exchangers built to customers' specifications or to our recommended designs. Inquiries are cordially invited.

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This unit measures moisture content by weighing and drying simultaneously. It utilizes an improved principle of operation in drying the sample by infrared radiation and weighing by a sensitive null-point torsion balance. As a result, extremely rapid, accurate and reproducible moisture determinations are easily made.

The CENCO Moisture Balance has been used successfully for determining moisture content in a wide variety of materials. New developments now make it possible to measure liquids as well as solid samples. Disposable pans are also available at low cost for use with greasy, oily, tacky, and adhesive materials eliminating the need for cleaning.

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Full details about this improved unit are contained in our bulletin No. 1210B. Write for your copy today.

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When inquiring check CP 1014 on handy form, pgs. 2-3

ing period, only three tests a day could be made per setup. When roughly a tenth of the runs were rejected because of inaccuracies due to non-uniform pumping rate, steps were taken to get more tests "in line."

Solution: Reciprocating pump was replaced by very accurate plunger type feeder which made just one stroke for entire 30 minute run. Gear train permitted adjustment of stroke speed, thus feed rate could be accurately preset to plus or minus one per cent or better.

Though oil going to cracking tower was preheated to 900°F, feed temperature was maintained at 60°F by means of water jacketing on feed cylinder. Pump could handle rates from 1 cc per hour up — on this job, rate is approximately 1.7 cc per minute.

Pressure built up because of downflow through fluid catalyst still sometimes reaches 15 or 30 psi. This back pressure, however, does not affect feed rate.

Valves and oil lines were selected for minimum liquid holdup. Small brass instrument valves are also used.

Schematic diagram is very similar to that of the system being used. Main difference is use of calibrated gas receiver rather than meter for checking gas evolved in cracking operation.

Results: Since June of 1949 when new oil pump was installed, tests have shown about 98% product recovery or better. Less than 5% of tests are now rejected because of low recovery, or poor results. In addition to this, ease of presetting to selected feed rates has made it easier to set up test runs.

(Micro-Feeder used in testing catalyst was designed and built by %Proportioneers, Inc. %, Dept. CP, 345 Harris Ave., Providence 1, R. I. . . . or reader may secure more information about this product by checking CP 1015 on convenient Reader Service slip between pages two and three.)

Chemical from seaweed has variety of uses

Salts of alginic acid, a colloidal polymer of d-mannuronic acid, are useful in industries where a hydrophilic colloid having thickening, stabilizing, gel or film-forming properties is required. The alginic acid salts of bi- and trivalent metals are particularly useful in these applications. Among those industries where these materials find use is the textile industry as well as the rubber coating and plastic coating fields.

Factual booklet gives information on alginates, dissolving of the materials and preparation of alginate solutions, influence of various factors on properties of these solutions, colloidal properties of the materials as well as properties of alginate gels, films and filaments.

"Alginates" is available from Croda Inc., Dept. CP, 51 Madison Ave., New York 10, N. Y. When inquiring reader may simply specify CP 1016 on convenient Reader Service slip between pages two and three.)

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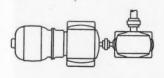
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How to change even complex speed reduction problems into <u>simple</u> ones

WORM GEAR DRIVE

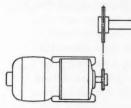
WORM GEAR and P.I.V. variable speed drives are shown direct-coupled. Link-Belt worm gear drives are available in 3.1:1 to 8000:1 reduction ratios—1400 to 123,000 in. lbs. torque—0.22 to 564 output shaft rpm. Ask for Book 2324A.





GEARMOTOR & HELICAL GEAR DRIVE

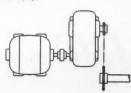
GEARMOTOR is shown with roller chain drive. Link-Belt Helical Gear Drives, Gearmotors and Motogears are available in 6.2:1 to 292:1 reduction ratios—1 to 30 hp—6 to 280 output shaft rpm. Ask for Books 2247 and 2451.





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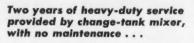
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paint plant uses unit with 135-gal tanks that need not be tilted to empty completely

Problem: Stewart-Mowry in Chicago, manufacturer of varnishes, enamels, and paints, needed a mixer that would stand up under heavy-duty continuous service in thinning down pastes, blending, and other operations to meet the demands for increased production.

Plant planned to use mixer in conjunction with 135-gal mobile tanks, a number of which are used. The change tanks used in past would not drain completely. In order to empty liquid in bottom,



Fig I—Tank is pushed into place for mixing while stirrers are in raised position

it was necessary to lift one side of the tank to force liquid out drain. This was a dangerous practice that could possibly injure operators.

Solution: Company acquired the change-tank mixer appearing in Fig 1. Unit has a one-piece cast iron column and base. Two stirrers, also of cast iron construction, are designed to give a homogeneous mixing of the material. Lower stirrer sweeps close to the bottom and side of the tank and is pitched to draw the material off the bottom and into the mix. Upper stirrer is pitched to force materials downward. This two-directional flow provides uniform agitation.

Raising arm is provided to lift stirrers, and lock in position when tanks are changed. Motor is



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Write Dicalite Division — Dept. D-75, 614 South Flower Street, Les Angeles 17, Calif., for information on how Dicalite can serve you.

Your Dicalite Engineer can bring light into your processing problems

While your Dicalite Engineer may be somewhat surprised at being called a searchlight, that is his job, essentially — to throw light on operating difficulties and clear them away. His intimate, detailed knowledge of diatomaceous materials and his wide experience in their applications will often solve an operating problem quickly. But, if necessary, he'll spend days working with you and your operators, ironing out difficulties or perhaps, aiding you in working out details for a projected new process.

Whether your problems involve filtration, fillers or any other use of diatomaceous silica, his expert services are always at your call. For extremely complex problems, you can call on the services of the fully-equipped Dicalite laboratories, who will spend weeks if necessary to get you the right answer.

Our crowded files of years past show how great the value of Dicalite Engineering Service is — to you and to us, also. For we are as interested as you in seeing to it that, when you get Dicalite, you get the results you want!



DICALITE DIVISION, GREAT LAKES CARBON CORPORATION . NEW YORK 17 . CHICAGO 1 . LOS ANGELES 17

When inquiring check CP 1018 on handy form, pgs. 2-3

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directly connected to drive shaft through a silent chain drive in oil-tight casing. Unit is equipped with heavy cut bevel driving gears.

Change tanks of 135-gal capacity, used in conjunction with mixer, are constructed so that drain is at low point of tank, as shown in Fig 2. Liquid being drained passes into a pipe which is mounted at a lower level than the bottom of the tank. A valve is connected at this point.

Results: Mixer has been in heavy-duty service in plant for more than two years, five days a week, eight hours a day. No breakdowns have occurred

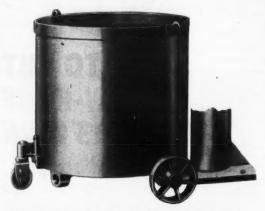


Fig 2—Note design of outlet which allows change tank to be completely emptied without lifting

during that period and no maintenance has been required except regular lubrication, according to plant manager.

Change tanks used with mixer drain completely empty, eliminating former operator hazard that was present due to lifting of vessel. They are sufficiently mobile so that they are easily moved around. In spite of hard, constant service, the change tanks have stood up well and have developed no leaks.

(No 30AB Ross Change Tank Mixer and Change Tanks are manufactured by Charles Ross & Son Co., Dept. CP, 148-156 Classon Ave., Brooklyn 5, N. Y. . . . check CP 1019, pages 2 and 3.)

Special wire cloth shapes solve plant problems

Eight-page, two-color booklet gives five brief accounts, with pictures and drawings on how special fabrications of metal wire screen or filter cloth solved actual industrial problems. One tells of building a strainer for heavy syrups, another about a slurry washer, a third about a folding screen to keep catalyst from blowing out of a vessel.

Bul 531 is issued by Multi-Metal Wire Cloth Company, Inc., Dept. CP, 1350 Garrison Ave. at Whittier St., New York 59, N. Y. When inquiring specify CP 1020, pages 2 and 3.



CONO CONTROL VALVES ... for water treatment

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Cono Close Coupled Pneumatic Control Valves provide unbroken service day in, day out—year in, year out—in the automatic operation of demineralizers and other process systems. Hundreds of Conoflow valves, like those shown here, have been in operation many years without maintenance or repair. Cono Control Valves are available in assemblies for on-off service (guaranteed bubble-tight shut off) or for throttling control. Available with optional features such as handwheel type limit stops as shown, plastic position indicators, and micro-switch attachments for actuating remote visible or audible signals. Body sizes up to 12ⁿ in all materials—rubber lined, Saran lined, alloys, etc.

Write or phone for Conoflow's usual personalized attention.

CONOFLOW CORPORATION

Foremost Manufacturers of Final Control Elements
2100 ARCH STREET, PHILADELPHIA 3, PENNSYLVANIA

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When inquiring check CP 1022 on handy form, pgs. 2-3

18

NEW SOLUTIONS of processing problems

Time-lapse photography cuts job-study cost . .

time study analysis is simpler since film run lasts 1/10 as long as actual operation photographed

Motion pictures taken with a time lapse camera now provide a rapid and inexpensive method for analysis and timing of group or crew activities. The time lapse camera used in this test takes a picture once every 1/100 of a minute whereas normal speed is 16 frames per second. Thus, 100 ft of film lasts 40 instead of four minutes.

In contrast to the time lapse method are two techniques in use today which are both tedious and expensive. Basically, these techniques include individual time studies on the men in the crew, or an interruption type study which indicates once a minute what each member of the crew is doing. The former is long and does not provide simultaneous visualization of individual activity in the group during actual measurement. The latter does not use a measuring device, but rather measures the percent of the time that each man spends doing his job. This requires eight full hours on the part of an observer who records the simultaneous activities of the crew.

One great advantage of the method using the time lapse camera is that it provides a permanent record which can be reviewed later. Also, once the camera is started, the observer is freed from watching camera and crew and can study other points of importance in connection with the project. The camera is driven by a synchronous motor which provides accurate timing of film so that it can be used both for analysis and for establishing time standards. Data can be charted very easily from the film's indications.

Helps Freight Loading

Loading operations are typical of activities that can be studied by means of the time lapse camera.

An actual case involved a three man crew. Two stackers were used to put cartons in place in a freight car with a fork lift truck supplying material to the stackers. Time lapse film showed relative activity of the three men and the delays or waits when someone in the crew did not have the proper work balance. Analysis of the film is used for improving methods, better work balancing, and for establishing time standard for that particular loading operation. Such films can be reviewed at normal speed showing 40 minutes of work in four minutes.

(Summarized from report of Mr. A. J. Rowe, Assistant Professor of Industrial Engineering, University of Southern California at Second Biennial Packaging and Materials Handling Institute held in Los Angeles, California.)

Motor stalling is eliminated on rubber shredders with fluid drives . . .

> normal operating current reduced from 64 to 18 amperes by absorption of shock loads

At the General Tire and Rubber Company synthetic rubber plant in Baytown, Texas, four disintegrating machines are used for shred-



HOW TO CUT BELOW-ROOF HEAT 13° to 26°

immediately!

Brush or spray on Tropical Roof Coolerant and feel the difference at once! This non-staining, bright metallic coating reflects up to 70% radiant heat away from the roof, cuts below-roof temperature up to 26° to give hot-weather comfort. Anyone can apply Tropical Roof Coolerant quickly, easily, at low cost. Do it NOW!

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Bright, seamless Roof Coolerant metallic shield prevents drying action of summer heat, keeps roof flexible, prevents cracks and leaks. Adds years to roof life!

FREE! Complete information, literature, on Tropical Roof Coolerant for comfort and roof protection THIS SUMMER. Write today!

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CHEMICAL PROCESSING

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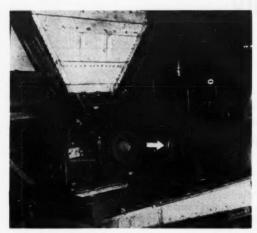
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these Co., I or for form,

ding lumps of synthetic rubber. Each unit, which is fitted with sharp shredder blades, operates in much the same manner as a hammermill.

Four 40-hp, 1750-rpm motors were used to drive the shredders. Each motor drew a normal operating ampere load of 64 amperes with a maximum of 90 amperes at peak current demand. Shock loading was very high when a large lump of rubber hit the shredder blades, causing motors to slow down and draw excessive current. Very frequently motors stalled under the load.

Solution: Four Model 12.2 Hydro-Sheave Drives were installed on the four shredders. The first fluid drive was put into operation in October, 1951, and the remaining three at a later period. At the same time, 30-hp, 1750-rpm motors replaced the 40-hp, 1750-rpm motors previously used.



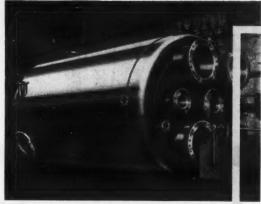
Hydraulic fluid drive (arrow) operating rubbershredding hammermill is shown in photograph between motor and hopper

The drive consists basically of two members, the impeller and the runner. Impeller, rotated by incoming power of motor, contains multiple blades which throw a steady stream of oil against the blades of the runner, causing it to revolve and deliver power through the output shaft. Either the impeller or the runner may serve as the input member. This ability to transmit power from either side simplifies mounting and installation of the coupling.

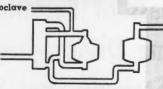
Results: Motor stalling has been eliminated by use of the hydraulic fluid drives, which absorb the continual shock loads. Smaller-hp motors are handling the same job better and without danger of burning out.

Replacement of the 40-hp motors with 30-hp units has decreased the normal running current from 64 to 18 amperes and peak load from 90 to 32 amperes.

(Disintegrating machines are the product of The Jeffrey Mfg. Co., Dept. CP, 956 N. 4th St., Columbus 16, Ohio. Hydro-Sheave Drives installed on these units are manufactured by Twin Disc Clutch Co., Dept. CP, 1361 Racine St., Racine, Wis. . . . or for more information check CP 1024 on handy form, pages 2 and 3.)



Lead Lined Jacketed Autoclave





Lead Lined Tank Car



Lead Covered Copper Coils



WRITE FOR FREE BULLETIN L-52
"CORROSION RESISTANT LINED EQUIPMENT."

when flow sheets call for "LEAD LINED"

Make early contact with Treadwell where 40 years fabricating experience goes into your equipment

HOMOGENEOUS LEAD LINED EQUIPMENT

By a special lead bonding process a layer of lead is bonded to the steel plate to form a homogeneous or integral metallic structure. The lead bonded plates are then fabricated into the desired equipment with all interior seams and joints being "hand-burned" to produce a continuous bonded lead interior.

Homogeneous lead lined equipment is recommended for corrosion resistant service where moderate fluctuating temperatures, vacuum, or vibration and physical shock are encountered, and where maximum heat transfer is important.

"SHEET-LEAD" LININGS

For use where operating conditions are not as severe. Treadwell can fabricate and furnish equipment with sheet lead linings securely fastened to the vessel or equipment.

LEAD COVERED COPPER COILS

Because extruded lead pipe coils lack rigidity for many heating operations and can only be operated at low steam pressure, the homogeneous bonded lead covered copper pipe coils has found a wide use in the process industries. Treadwell has available stock lengths of lead covered copper pipe and can design and fabricate coils to meet, your requirements.

• OTHER LINED PRODUCTS

Conditions of corrosive service will require the use of various materials. Treadwell is equipped to supply other corrosion resistant linings as required by your process.



CONSTRUCTION CO.
PITTSBURGH · NEW YORK · CHICAGO
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Reprinted from November 1952, INDUSTRIAL and ENGINEERING CHEMISTRY

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New Class of Bactericides and Fungicides Overcome Disadvantages of Toxicity, Odor, Staining, and Solubility

Results of soil burial tests on treated fabrics surpass effectiveness of copper-8-quinolinolate and copper naphthenate

A NEW class of bactericides and fungicides has been developed to overcome many of the objections encountered with the application of conventional products . . . phenolic, mercury, and copper and zinc soaps. Some of the disadvantages overcome by the Phenamins are toxicity, discoloration, odor, skin irritation, leachability, corrosion, and water solubility. Gap in properties between the chlorophenolics and the organic copper salts is said to be bridged. All Phenamin products can be applied as water systems.

Products are offered as 100% active grades soluble in organic solvents and 50% active water emulsifiable grades. Utilization extends to the following fields: textile, paper, wood, cordage and rope, leather, paint, wax and polish, sizing, vinyl plastic, agricultural, and pharmaceutical.

Phenamin Special & Phenamin Special W.E.

Phenamin Special and its water emulsifiable grade (W.E.) are effective bactericides and fungicides exhibiting lack of odor, absence of heavy metals and chlorine, very low toxicity (of the order of table salt), high penetrability, practically colorless, water insolubility, non-corrosiveness, and non-irritatibility to the skin (at effective concentrations). Reported to exceed the properties of o-phenylphenol, p-nitrophenol, and others.

Especially recommended in applications where lack of odor is paramount, such as post-harvest treatment of fruits, bacteri-proofing of paper wrappings, food product wrappers, etc. Other fields of utilization are pharmaceuticals, sanitary wrappers, respiratory mask impregnation, cotton shoe lining and hosiery treatment against "athlete's foot", waxings, plywood impregnations, fur conservation, etc. They are not recommended where the treated material is exposed to outdoor elements.

Composition is tetradecylamine-ortho-phenyl phenate — 95% (minimum) active for Phenamin Special, and 50% active for W.E. Both products demonstrate very high bacteriand fungicidal properties when properly dispersed in water. As a bactericide, A.O.A.C. phenol coefficient against Salmonella typhosa was shown to be 80. As a fungicide, A.O.A.C. fungicide tests indicate the phenol coefficient against Trichophyton Interdigitale to be seventy-eight.

Some of the physical properties are tabulated below:

Color	light pink
Volatile solvent	none
Flash point (min), °F	250
Solubility in,	insoluble
netroleum solvents miscible	(except W.E.)

Phenamin Technical & Phenamin Technical W. E.

Phenamin Technical and its water emulsifiable grade (W.E.) are technical grades of Phenamin Special and Phenamin Special W.E., respectively. For practical purposes, the same high anti-microbial properties are retained. Only difference is a faint, pleasant odor which limits their use to applications where this cannot be considered objectionable. In addition, the technical grades have a lower leachability, and use therefore is somewhat broader. Good resistance to light and heat are reported.

Specific recommendations for application include surface mildew-proofing of textiles, fungi-proofing of adhesives, and especially in treating cotton shoe linings and hosiery against "athlete's foot". Other uses extend to pre-harvest fungicidal sprays and dusting powder formulations for orchards, gardens, industrial crops, and against a host of fungus diseases. Except for being yellow in color, same physical properties hold as for Phenamin Special.

Phenamin Copper & Phenamin Copper W.E.

Phenamin copper is very effective for application in either conventional solvent spirit solution or with the water emulsifiable grade W.E. for water emulsification. Following are the results of soil burial tests (US Army Spec. JAN-D-504, method 5762) — comparing Phenamin Copper with two conventional

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copper 8-quinolinolate and one copper naphtenate formulations. White cotton duck fabric (4 x 6" swatches) was used.

TENSILE STRENGTH LOSS, %

Fungicide 2	Weeks	3 Weeks	Color after Treatment and Drying
Copper 8-quinolinolate "Solubilized" (10% Cu- 8-Q), 0.25% metallic copper deposit	10	30	light tan
Copper 8-quinolinolate organic dispersed (10% Cu-8-Q), 0.25% metallic copper deposit	13	59	brown
PHENAMIN COPPER			
0.25% metallic Cu de- posit 0.5% metallic Cu de-	4.5	10	bright
posit	0	2	blue-green
Copper Naphtenate 0.5% metallic Cu de-			deep
posit	12	25	green-tan

Loss of tensile strength of fabrics treated with Phenamin Copper after 2 weeks is approximately 60% less as compared with Cu-8-Q formulations. After 3 weeks, the total loss of tensile strength is not more than 10% - still within the limits required by Government Specification for a 2 weeks' burial test.

Phenamin Copper W.E. in the same manner provides a useful and economical way of impregnating fabric with effective fungicide. Because the color after treatment is bright bluish-green, textile manufacturers need no longer concern themselves with overcoming brown and tan discolorations.

In addition, Phenamin Copper impregnations are odorless, resistant to leaching and crocking, and exhibit a low order of toxicity. Price is said to be many times lower (1/4th) than currently marketed Cu-8-Q dispersions and solubilized solutions.

Composition is alkylamine-ortho-phenylphenate of copper - 92% (minimum) active (or 9-10% copper metal) for Phenamin Copper, and 50% active (or 4.5-5% copper metal) for the W.E. grade. Some physical properties are tabulated below:

Color	deep green
Volatile solvent	less than 5%
Flash point (min), °F	105

Phenamin Zinc & Phenamin Zinc W.E.

Phenamin Zinc and the water emulsifiable grade W.E. are stable preservatives and outstanding fungicides for those applications where copper cannot be tolerated. Recommendations are numerous where unchanged color, non-toxicity, non-irritants to the skin are more important than extremely high fungicidal activity (such as that of Phenamin Copper) are required. Does not discolor in contact with bronze and copper - an outstanding feature.

Results of a 2 weeks' soil burial test on twill cloth (after 24 hours perspirant leaching) showed that

(Continued on page 25)



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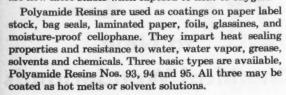
General Mills Announces Lower Prices On **Improved Polyamide Resins**

Full Line Stabilized for Improved **Color and Heat Stability**

The price of General Mills' Polyamide Resins has been reduced to a new low on purchases over 8,000 pounds. Current prices have been cut from 55¢ to 48¢ a pound

in quantities of 8,000 to 20,000 pounds, and from 50¢ to 46¢ on 20,000 to 40,000 pounds.

Color stability has been improved. Also, Polyamide Resins are now more stable when exposed to heat or oxygen.





LYAMIDE RESINS!

Now! Get Polyamide Resins for less in quantities over 8,000 pounds. As much as 7 cents a pound less!

Because sealing temperature is low (starting at 176°F.) compared to other heat sealing coatings (typical polyvinyl acetate and ethyl cellulose formulations seal starting at 212°F.) Polyamide Resins reduce danger of damaging the paper.

Polyamide Resins are soluble in many common solvents such as n-butanol, and blends of 70% toluene plus 30% isopropanol, but are insoluble in such solvents as acetone and methanol.

The flexibility of Polyamide Resin gives effective moisture and grease protection on creased as well as

Polyamide Resin is an excellent overprint coating, too. On labels, a Polyamide Resin film only half the thickness of polystyrene, a common overprint varnish, gives equal gloss.

Important Physical Characteristics:

- · Low Melting Point
- Heat Sealability
- Grease and Oil Resistance
- · Non-Blocking
- Scuff Resistance
- Water and water vapor Resistance

TO ORDER

Polyamide Resins, or for additional data, address:

General Mills, Inc.

Chemical Division, Minneapolis 1, Minnesota

Send Name, Firm Name and Address PHONE: ATlantic 1144



materials

High Molecular Weight Naphthenic Acids Are More Like the Fatty Acids

Compared with the lower acids, soaps are more oil soluble and hydrocarbon compatibility is greater

APHTHENIC acids available commercially until now have been mixtures of the lower members of the naphthene (cycloalkane) series of hydrocarbons of about 7 to 14 carbon atoms per molecule. Average molecular weight ranges between 200 and 275 — indicating one to two rings per molecule. They have been obtained by caustic soda extraction of gas oil, naphtha, and kerosine.

Existence of naphthenic acids, however, is not limited

to the lower fractions of crude oil, since they also extend up through the lubricating oil fractions. Higher molecular weight naphthenic acids range in length from 14 to 30 carbon atoms and have average molecular weights ranging be-tween 250 and 450. Two and three rings per molecule predominate, however more rings are thought to exist in some molecules. They are reported to conform more closely to the properties of the common fatty acids.

Properties differ considerably between the high and low molecular weight products. Comparison of constitutional and physical data is presented in the accompanying tabular form.

High molecular weight acids distinquish themselves from the lower by exhibiting properties more like hydrocarbons. Thus, they are more compatible with mineral oils, other hydrocarbons, and rubber and other similar polymers. Metallic soaps have higher oil solubility for this reason.

Absence of olefinic unsaturation, higher hydrocarbon solubility, good resistance to oxidative rancidity, and lower freezing points characterize the high molecular weight naphthenic acids from fatty acid mixtures. Alkali soaps are said to be so oil soluble that they do not give the characteristic grease structure which fatty acid soaps do.

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Numerous products of different molecular weights for tailored uses can be derived from naphthenic acids at comparatively low cost. In general, the higher acids are recommended where hydrocarbon

NAPHTHENIC ACIDS

	Low Molecular* Weight	High Molecular* Weight
Acid number (mg KOH/gm)	168	153
Saponification number (mg KOH/gm)	271	154
Refractive index, n(20/D)	1.4737	1.5014
Density, d(20/4)	0.9783	0.9831
Viscosity, SUS/100°F	220	32,000
Viscosity, SUS/210°F	44	290
Bromine number	3	7
Carbon, wt %	73.17	79.52
Hydrogen, wt %	11.03	11.52
Sulfur, wt %	0.14	0.15
Oxygen, wt %	15.66	8.82
Avg. molecular weight	206 .	363
Avg. empirical formula	C _{12.6} H _{22.7} O ₂₋₀₃	$C_{24*0}H_{:1*5}O_{2*00}$
Avg. type formula	On H2n-2.502	^C n ^H 2n-6.5 ^O 2

*Freed of unsaponificable matter

When inquiring check CP 1027 on handy form, pgs. 2-3

solubility or a large hydrocarbon group is needed . . . the intermediate acids (250-350 molecular weight) where emulsification and other surface properties of the naphthenic soaps are necessary . . . and lower acids where the value of the acid depends upon the amount of metal it will carry, as in driers.

Reactivity and Utility

Naphthenic acids react in a similar fashion to carboxylic acids, yielding products differing enough in physical properties from fatty acid derivatives to be of interest in numerous applications.

They form *alkali soaps* on reaction with alkali hydroxides, oxides, and carbonates. Soaps more closely approach ideal solutions in water than do soaps of fatty acids. In addition, they are more soluble in hydrocarbon and other organic solvents for a specific molecular weight. Intermediate acid soaps are especially helpful in preparing emulsifiable oils and specialty products, and as emulsifiers for increasing the rates of reactions involving 2-phase systems.

Alkali naphthenates reacted with the proper metal salts yield alkaline earth and heavy metal naphthenates. Same can be accomplished by reacting naphthenic acids with the specific metal oxide, hydroxide, or acetate. Utility of these end products are found in the paint, varnish, and oil additives fields, and in preservatives for wood, fibers, and textiles.

Organic derivatives of high and intermediate molecular weight naphthenic acids have outstanding interest. Included are the esters, ketones, acid halides, amides, alcohols, nitriles, amines, and their many derivatives.

Esters can be prepared by the simple reaction of naphthenic acids with monohydric alcohols or olefins. Of course, complex esters can be formed by either complete or partial esterification of compounds containing hydroxyl groups. Alkyd and other resins can be modified with naphthenic acids. When condensed with ethylene or propylene oxides, non-ionic emulsifiers and surfactants result. In general, esters find utility as plasticizers, solvents, softening agents, surfactants, lubricant additives, and in protective coatings and water-proofing compounds.

Pyrolysis of metal naphthenates or the Friedel-Crafts synthesis yield *ketones*, proposed as insulating dielectric, and moisture-proofing agents, as lubricating oil additives, and for use in plastics and resins.

Acid balides and anhydrides find their greatest utilization as chemical intermediates.

Acids react with ammonia, giving ammonium soaps, amides, and nitriles that may serve as useful intermediates for other reactions. Amines are formed by the reduction of nitriles.

Chemical reduction or catalytic hydrogenation of naphthenic acids or their esters results in formation of naphthenyl alcohols — useful chiefly as solvents, modifiers, intermediates, and additives for lubricants.

The Sun Oil Co. is recovering these higher molecular weight naphthenic acids from lubricating oil fractions. At present, they are constructing a new plant to recover over 10-million pounds annually.

(Continued on next page)

INQUIRE ABOUT

Oronite POLYBUTENES

a versatile chemical widely used to improve products and performance at reduced raw material costs

Properties: Polybutenes are nearly water-white chemically inert liquids of moderate to high viscosity and tackiness. They have excellent aging characteristics—do not become gummy or waxy and do not harden, darken or change in any essential property over long periods of atmospheric exposure. Polybutenes can be readily emulsified using standard techniques and equipment. They are available in four grades, based on viscosity. Complete information is available in a technical bulletin sent on request.



A partial list of Oronite Products

Detergent Alkane Detergent Slurry Detergent D-40 Detergent D-60 Dispersant NI-O **Dispersant NI-W Wetting Agents Lubricating Oil Additives** Cresylic Acids Gas Odorants Sodium Sulfonates **Purified Sulfonate** Polybutenes Naphthonic Acids Phthalic Anhydride Ortho-Xylene Xylol **Aliphatic Acid Hydroformer Catalyst** Dispersant FO (Domestic Fuel Oil Inhibitor)

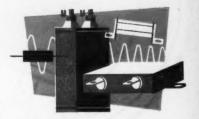
ORONITE CHEMICAL COMPANY 38 SANSOME STREET, SAN FRANCISCO 4, CALIFORNIA

38 SANSOME STREET, SAN FRANCISCO 4, CALIFORNIA 30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK STANDARD OIL BLDG., LOS ANGELES 15, CALIFORNIA 600 S. MICHIGAN AVENUE, CHICAGO 5, ILLINOIS MERCANTILE SECURITIES BUILDING, DALLAS 1, TEXAS



Ideal for sound deadening, insulation or calking compounds

Polybutenes are widely used in various insulating compounds by the automotive industry (1) to prevent rust and corrosion of metal chassis parts (2) to prevent rattles and squeaks as a "noise eliminator" between metal to metal surfaces. In the home appliance industry as an insulation compound medium against heat or cold. Compounds can be pigmented or used in natural color of the mineral filler.



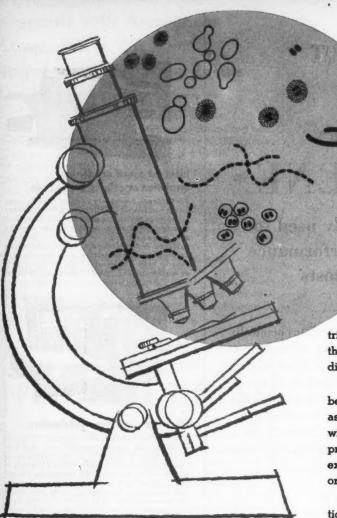
Electrical properties outstanding

Oronite Polybutenes offer superior dielectric strength, low expansion coefficient and low power factors essential in paper-insulated electrical products. Because of their low power factor values over a wide frequency range, they are useful as a dielectric in condensers and capacitors. Accelerated aging tests show the great stability of this power factor over long periods of time. Their compatibility with many synthetic rubber and rubber-like polymers permits ready compounding for flexible insulations.



Economical extender of rubber

Polybutenes can be used as a rubber extender in the manufacture of rubber boots, garden hose, hot water bottles and a host of other molded rubber products. Besides extending rubber, Polybutenes plasticize the mass of rubber making it more pliable for easy milling. Polybutenes are also used in milling up reclaimed rubber batches and have a field of usefulness in plasticizing various synthetic rubber latices.



Don't Let Bacteria and Fungi Spoil YOUR Product!

Many pharmaceuticals, cosmetics and industrial products require a preservative to prevent the growth of microorganisms which may cause discoloration, objectionable odor or deterioration.

The Heyden Parasepts (esters of parahydroxybenzoic acid) have long given valuable service as inhibitors of bacterial and fungal growth in a wide variety of products. They combine the properties of high effectiveness, stability, and extremely low toxicity, in addition to being colorless, odorless and practically tasteless.

Five Parasepts are available to meet your particular requirements. Research has shown the advantages of using a combination of two or three esters, which gives better protection against microbial contamination than any one ester.

HEYDEN PARASEP



HEYDEN CHEMICAL CORPORATION

342 Madison Avenue, New York 17, N. Y.

CHICAGO . PHILADELPHIA . SAN FRANCISCO . DETROIT . PROVIDENCE

Write for a copy of the technical bulletin on the Parasepts. Samples (Purified or Technical) are available promptly on request.

> METHYL PARASEPT (Methylparaben U.S.P.)

ETHYL PARASEPT

PROPYL PARASEPT (Propylparaben U.S.P.)

BUTYL PARASEPT

BENZYL PARASEPT

Shipped in 100, 50 and 25-lb. fiber drums.

MATERIALS

(Continued from preceding page)

The new facilities are expected to yield highly uniform acids. Acids with various molecular weights will be available to fit the right acid to the right application.

Sun is engaged in devolping the chemical derivatives and potential applications for the higher naphthenic acids as discussed above.

(Summary of a paper by Dr. James L. Jezl of the Sun Oil Company, Dept. CP, 1600 Walnut Street, Philadelphia 3, Pa. . . . or for more information check CP 1030 on handy form, pages 2 and 3.)

Film Forming and Solubility Characteristics Enhance Carrier Chemical

Ability to form removable film, improve flow and adhesiveness, emulsify materials, and its insolubility in cold water make modified sodium stearate of value for many applications

USES: One important use of product is in combination with glyceride in buffing compositions. Its employment as a carrier for molybdenum disulfide lubricants is also widespread. In addition, chemical is utilized as a plasticizer in paste and glue, as a base for rust preventive compounds, and as a wax emulsifier. Its properties suggest that it may be of value in other applications.

Product improves the malleability or Features: plasticity of buffing compounds, making them flow better and spread out evenly. Since material can be washed off of metal, it facilitates cleaning preparatory to plating. Property of contraction on cooling also assists in removal.

When used as a carrier for molybdenum disulfide lubricants, it forms a continuous protective coating. Since it has high "wetting-out" power, it increases the adhesiveness of the grease. It forms a film which has high strength.

In manufacturing a paste or glue, material is readily soluble. However, it is insoluble in ice water, making labels stay on bottles during cooling.

When used as a base for water soluble rust preventives, it is reported to help control vapor transmission, keeping water vapor from penetrating film. Thus, it has some rust preventive properties

It can be used to increase viscosity and to act as an emulsifier. When it is used as an emulsifier

When inquiring check CP 1029 on handy form, pgs. 2-3

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for wax, melting point is not lowered. It makes the wax miscible with water.

Description: Actrasol SS is a sulfonated saponified stearic acid, plasticized with mineral oil. It can be said to be a modified sodium stearate (SS). Product contains 2.5 to 3.0% free fatty acid as oleic. Satisfactory cleaning results can be maintained with an increase in unsaponifiable content. An aqueous solution of product has a pH of 8.6. Solubility in various solvents is increased when the 7% water present is removed.

Material is soluble in hot water and insoluble in cold water. It softens at 145°F with very tacky characteristics. When it melts at 190°F, it becomes soluble in glyceride and hydrocarbon oils. In conjunction with other oils, it increases their viscosity. In a soluble oil, the torque is increased.

Product looks, like reddish brown fudge. It is slabbed and packed in 200 lb fiber drums or in 250 lb bags. Shipment can also be made with diluent added to lower the melting point.

(Actrasol SS is manufactured by the Arthur C. Trask Co., Dept. CP, 4103 S. La Salle St., Chicago 9, Ill. . . . or for more information check CP 1031 on handy form, pages 2 and 3.)

Bactericides & Fungicides

(Continued from page 21)

treatment with Phenamin Zinc W.E. retained tensile strength 12% better than did similar treatment with Cu-8-Q solubilized.

Specific applications include rubberized fabrics, rubber paints, etc., where copper has deleterious effect on rubber. Others include treatment of sulfate kraft paper for making corrugated cartons in which fruits and other food products are shipped.

Effectiveness as a fungicide is evidenced by the following laboratory tests... White cotton duck fabric impregnated with 2% Phenamin Zinc and exposed to 5 common fungi produced a zone of inhibition of 27 mm (Bureau of Ordnance Spec. 52 T 15 (Ord.). Again, kraft sulfate paper impregnated on a factory paper coating machine gave the following results when tested (same as before) for resistance to 5 common fungi:

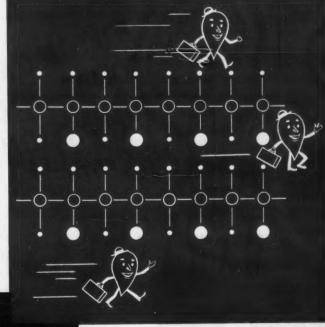
Phenamin	Zinc,			Inhibi	
%				Zones,	mm
2				-27	
1.33				-8	
0.8*				-3	
*Drie	d after	impregnation	@	300°F	

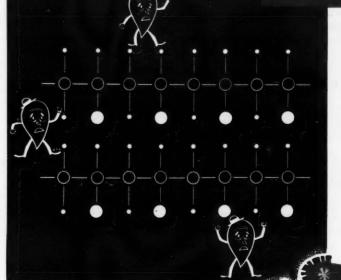
Some of the physical properties are tabulated below:

Color	light yellow
Volatile solvent	less than 5%
Flash point (min), °F	105

(The Phenamin line of bactericides and fungicides were developed and are being manufactured by By-Products Processing Laboratories, Inc., Dept. CP, 42-17 27th Street, Long Island City 1, New York . . . check CP 1032, pages 2 and 3.)

Plasticizers can't migrate...





SUGGESTED USES

- Heat-seal and solvent-reactivating coatings
- Adhesives for transparent sheetings, foils, varnished papers, inked papers, and other difficult surfaces
- Greaseproof and asphaltproof coatings
- High-solids emulsions and lacquers
- · Binders for paper, fibers, cork, asbestos, etc.
- Sizes and binders for textiles and carpets
 ... or National will tailor-make a Vinyl Acetate copolymer for your specific use.



Internally Plasticized Copolymers of Vinyl Acetate give films that are permanently flexible. Plasticizer is locked in by a chemical bond. Can't escape even if heated for days. In addition to permanent flexibility you get—Very good adhesion • Excellent light stability • Good film clarity and film continuity • Greaseproofness • Ease of application • Compatibility with many other chemicals • Supplied in solution, emulsion or hot melt form.

Tational Adhesives

270 Madison Avenue, New York 16, N. Y.

When inquiring check CP 1033 on handy form, pgs. 2-3

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MARASPERSE dispersants are more effective and considerably more economical to use. They are completely soluble in water, are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

With the addition of as little as only .05% to a maximum of 3.0% of MAR-ASPERSE, (based on weight of solids), from 35% to over 300% MORE solids may be dispersed and maintained in fluid suspension.

MARASPERSE stabilizes water dispersions of insoluble solids by setting up repulsive forces on the particles, thereby preventing flocculation.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides,

industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for File No. 301. for additional information on Marasperse products. You will receive complete and specific technical data. Our research staff will welcome the opportunity to cooperate with you.





26

MARATHON CORPORATION

ROTHSCHILD . WISCONSIN

When inquiring check CP 1034 on handy form, pgs. 2-3

Reduce Emulsion Paint Ingredients from 16 to 5 Through Use of Acrylic Dispersion

Resin vehicle capable of replacing drier, antifoam, curing aid, bactericide, fungicide, thickener, stabilizer, emulsifier, colloid, resin, and plasticizer in formulations

A NEW type of resin vehicle for emulsion paints is reported to carry over the useful properties of acrylic plastics into the field of protective coatings. Resin, designated as Rhoplex AC-33, is a 100% acrylic dispersion in water. Following advantages are reported over previous vehicles:

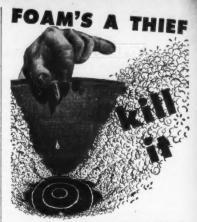
- 1) Simplicity of formulation, without requiring protective colloids, viscosity stabilizers, or preservatives.
- 2) Excellent stability, including compatibility with many pigments, freedom from putrefaction, and resistance to freezing and thawing.
- 3) Ease of application by roller coater, brush, or spray gun.
- 4) Fast drying and quick recoating.
- 5) Good adhesion, color, and color retention, as well as long film life.
- 6) Easy removal of stains, good scrub resistance.

Rhoplex AC-33 is supplied as a 46% solids dispersion in water. Its specific gravity is 1.04 and the pH is 9.0-9.5. Resin itself is fully polymerized. Films dry entirely by evaporation of water. Properties of the acrylic resins are reported to develop within a few hours after application of the paint.

Emulsion paints based on the resin should appeal to formulators because of simplicity of manufacture. It is usually unnecessary to employ any of the additives currently used in emulsion paints to build up body, prevent putrefaction, mask odor, stabilize viscosity, impart adequate toughness, and protect against the effects of thawing and freezing. The resin contributes most of these necessary and desirable properties. Paints are expected to have excellent stability in storage.

Users of emulsion paints containing the resin are reported to find them easy to apply — whether by roller coater, brush, or spray gun. Adherence to most surfaces is good without need for sealers. Odor is said to be very mild and to disappear within a few moments. Paints dry to touch within 15 minutes, and can be recoated soon after application without lifting the film.

Improvements introduced by Rhoplex AC-33 in paints are most outstanding in the case of stain removal and scrubability. Painted surfaces may be



with DOW CORNING

Use productive capacity now wasted on foam; cut processing time with Dow Corning Antifoam A, the silicone defoamer that works at concentrations in the range of:

3 ppm 6 in recirculating cooling brines 2.5 ppm 6 in bottling soft drinks

2 ppm & in varnish cooking 200 ppm & in textile resin backings 0.4 ppm & in steel pickling baths

♦ Effective at remarkably low concentrations in a wide variety of foamers, Dow Corning Antifoam A compound is harmless physiologically. It can be used as received, mixed with one of the foaming ingredients or dispersed in a solvent for industrial applications.

Equally versatile and more easily dispersed, Dow Corning Antifoam AF Emulsion is a water dilutable defoamer containing 30% Antifoam A. Originally designed for use in the food processing industries, Dow Corning Antifoam AF Emulsion has a wide field of industrial usefulness.

fulness.

see for yourself!



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Midland, Mich., Dept. BB-5

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	Daw	Carring	Antiform	AF Em

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ADDRESS	

When inquiring check CP 1035 on handy form, pgs. 2-3

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COMPARISON OF INGREDIENTS IN EMULSION PAINTS

Typical Ingredients	Ordinary Emulsion Paints	Rhoplex AC-33 Emulsion Paints
RHOPLEX AC-33		X
Ordinary Vehicle	X	
Drier	×	
Antifoam	X	
Curing Aid	×	
Bactericide	×	
Fungicide	X	
Thickener	X	
Stabilizer	×	
Emulsifier	X	
Colloid	X	
Resin	X	
Plasticizer	X	
Water	×	X
Pigment	Χ .	×
Dispersant	×	X
Glycol	X	X

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scrubbed after overnight drying. Good resistance is shown to soap and cleansers. Lipstick, pencil, crayon, grease, and scuff marks can be easily removed with soap or a mild abrasive. Paints are reported to show little tendency to embrittle or discolor with age.

(Rhoplex AC-33 is a product of the Rohm & Haas Company, Dept. CP, Washington Square, Philadelphia 5, Pa. . . . or for more information check CP 1036, pages 2 and 3.)

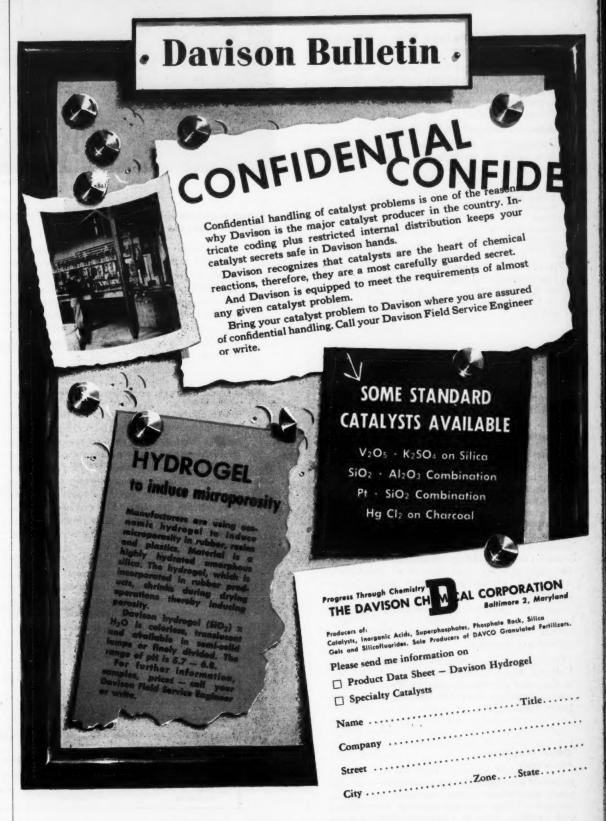
Booklet gives ASTM specs for steel piping materials

This 394-page publication is the December 1952 edition of compilation sponsored by the ASTM committee on steel. Materials covered include: pipe used to convey liquids, vapors, and gases at normal and elevated temperatures; boiler, superheater, and miscellaneous tubes; still tubes for refinery service; heat-exchanger and condenser tubes. Specifications are also included for the following materials used in pipe and related installations: castings; forgings and welding fittings; bolts and nuts.

New specifications cover: quenched and tempered alloy steel bolts and studs with suitable nuts; electric-fusion-welded austenitic chromium-nickel alloy steel pipe for high-temperature service; ironchromium and iron-chromium-nickel alloy tubular centrifugal castings for general applications.

Sixteen emergency alternate provisions applying to specifications in this compilation are printed in pink section at back of book. They are intended for use where they may be considered by the purchaser of material as a permissible alternate for the specific application or use desired.

To obtain "ASTM Specifications for Steel Piping Material" remit \$3.75 per copy direct to American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia 3, Pa. When inquiring specify CP 1037 on handy form, pages 2 and 3.



When inquiring check CP 1038 on handy form, pgs. 2-3

Unusually high purity for orthodichlorobenzene

Uses: Synthesis of fine chemicals, especially where the physical properties of such chemical cannot vary from batch to batch. Used for dyes and pigments, in solvent applications, and in analytical procedures.

Features: Unusually high purity.

Description: Orthodichlorobenzene as prepared by this maker in pilot plant equipment has the following specifications:

Assay, %	99
Boiling point, °C	180.1 ± 0.5
Freezing point, °F	-17.2 ± 1
Color	colorless
Density (15/15)	1.312
Refractive index (20/D)	1.5489
Volatility	volatile with steam

(Product Solvay Process Division, Allied Chemical & Dye Corporation, Dept. CP, 61 Broadway, New York 6, New York . . or for more information check CP 1039 on handy Reader Service slip, pages 2 and 3.)

Simple one-bath treatment puts protective paint base on aluminum alloys . . .

treated surface can be successfully welded without removing the coating from it

Uses: Protects any standard aluminum alloy against corrosion; also serves as a paint base.

Features: Salt spray resistance is in accordance with government specs (see below). Treatment is simple, uses a single bath at room temperature, and takes anywhere from ½ to 5 minutes. Venting is not necessary.

Description: Chemoxide III is applied as a solution — 3 ounces of the salts in one gallon of water. The coating does not have to be removed prior to welding. Electrical resistance of the coating is low, and there is no interference with either alternating or direct high-frequency currents.

Among the government specifications which the coating meets are MIL-S-5002, ANC-170-5, MIL-C-5541, NAVORD OS-675, 16E4 (SHIPS), and JAN-T-704 Amend-1.

(Development of Technical Processes Division, Colonial Alloys Company, Dept. CP, Ridge Ave. & Crawford St., Philadelphia 29, Pa. . . . or for more information check CP 1040 on handy form, pages 2 and 3.)

Offer stabilizers for vinyls

A line of heat and light resistant stabilizers are currently being offered to the vinyl plastic and coating industries. They may be employed in processing and stabilizing clear or pigmented vinyls in calen-



(scanning time: 1 min. 50 sec.)

VICTOR PHOSPHORUS CHLORIDES . . . IDEAL CHEMICALS FOR YOU

This versatile group of Victor phosphorus chlorides has found a good measure of application. New uses are now being considered by industry and the future holds promise of broad application. You may get an idea from the information on the following page that can benefit your company. These chemicals are offered for your evaluation. Experimental samples are available. Mail the coupon.

NEW CHEMICALS ... NEW POSSIBILITIES FOR YOU

Users of the newer Victor phosphates, phosphorus compounds, formates, and oxalates will tell you that it really pays to keep an eye on Victor research. Many important problems of industry have been solved by Victor's technical and research staffs through development of new chemicals and new uses. In some instances, plus benefits like the addition of new and impelling sales features for *their* products, lower operating and labor costs, more production, greater efficiency were gained.

Right now, there are several new Victor developments that offer promise. The phosphorus chlorides described here may solve a product or process problem for you. Their unique properties definitely merit your consideration as do those of other new Victor chemicals.

RESEARCH . . . ANOTHER DEPENDABLE VICTOR FACILITY

For 55 years, Victor has specialized in the development and manufacture of phosphates, phosphorus compounds, formates, oxalates. Victor recognizes the importance and contributions of an expanding and continuing research program. That's why you can depend on Victor research for useful developments that can aid you and make your work easier and your company's process and products better. It will pay you to keep an eye on Victor Research.

MCTOR

Look, also, to Victor for dependable service, for dependable chemical manufacturing standards, for dependable product quality and purity. Victor's facilities and service to industry are unmatched in this field. When selecting a source of supply, be guided by this fact: Victor is recognized as . . . the dependable name in chemicals.

HELP FOR PRODUCT PROBLEMS

If you have a product or process problem, bring it to Victor. Our technical and research people and laboratories are geared to aid industry. Your inquiry is invited.

NEW FOLDER ON VICTOR RESEARCH CHEMICALS AVAILABLE MAIL THE COUPON FOR YOUR COPY

A new, handy folder which describes 45 Victor research chemicals has just been completed. You will find it to your advantage to be one of the first to receive a copy. One or more of these interesting chemicals may offer possibilities to you. Mail the coupon today for your copy.

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Please send without cost or oblig	ation:		
☐ Sample of Phosphorus Trichloride ☐ Sample of Phosphorus Oxychloride	Sample of Benzene Phosphorus Thiodichloride	COMPANY	
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Phosphorus trichloride is a clear, colorless liquid. It decomposes in water to give phosphorous and hydrochloric acids, and is chemically very reactive. Typical quality: Boiling range 75.5°C.-77.0°C. at 760 mm. Uses: Chlorinating agent in organic synthesis; intermediate in production of phosphites, organic chemicals. Available in tank cars and returnable drums.

PHOSPHORUS OXYCHLORIDE

POCI

Phosphorus oxychloride is a water-white to slightly yellow liquid. It decomposes in water to yield phosphoric and hydrochloric acids, and is chemically very reactive. Typical quality: Boiling range 106°C.-108°C. at 760mm. Uses: Intermediate in production of organic chemicals; as a chlorinating agent, and catalyst. Available in tank cars and returnable drums.

PHOSPHORUS THIOCHLORIDE

PSCI:

Phosphorus thiochloride (thiophosphoryl chloride) is a faint yellow to colorless liquid with a distillation range of 120-125°C. Typical analysis: 18.5% phosphorus and 18.6% sulfur. Uses: Intermediate in chemical manufacture. Typical end products are oil additives, ore flotation agents, and insecticides containing both phosphorus and sulfur.

MENZENE PHOSPHORUS DICHLORIDE

C6H5PCI

(Phenyl dichlorophosphine). Mol. Wt. 179. Specific gravity 1.315 at 25°C. Boiling point 224.6°C. at atmospheric pressure. A colorless liquid which fumes in air. It is a highly reactive acid chloride which hydrolyzes in water and reacts with alcohols, phenols, amines, and aldehydes. Adds oxygen, sulfur and halogens. Suggested uses: As an intermediate in organic synthesis.



BENZENE PHOSPHORUS OXYDICHLORIDE

| |

C6H5PCI2

(Phenyl dichlorophosphine oxide). Mol. Wt. 195. Specific gravity 1.375 at 20°C. Boiling point 258°C. (atm.). Colorless liquid of faint fruity odor. Soluble in benzene, chloroform, carbon tetrachloride. It is a reactive acid chloride. Suggested uses are: As an intermediate for synthesis of plasticizers and oil additives, and in general organic synthesis.

BENZEHE PHOSPHORUS THIODICHLORIDE

S || C₆H₅PCl₂

(Phenyl dichlorophosphine sulfide). Mol. Wt. 211. Specific gravity 1.376 at 13°C. Boiling point 205°C, at 130 mm. A colorless liquid which fumes slightly in air. It is a reactive acid chloride which hydrolyzes very slowly in water but reacts with alcohols, phenols, and amines. Suggested uses are: As an intermediate in organic synthesis and as an additive in extreme pressure lubricants.

BENZENE PHOSPHINIC ACID

Mol. Wt. 142. Melting point 84-85 °C. White crystals soluble in alcohol and water. Slightly soluble in ether. Monobasic acid. It is a stabilizer for vinyl resins, and a general anti-oxidant.

BENZENE PHOSPHONIC ACID

C₆H₅P-OH | OH

Mol. Wt. 158. Specific gravity 1.475. Melting point 164-165°C. White crystals. Strong dibasic acid. Soluble in water, alcohol, ether. Stable in air. Suggested uses: Catalyst for urea formaldehyde and related resins. Intermediate for metallic salts used as antifouling agents in paint, and oxidation catalyst.

VICTOR CHEMICAL WORKS

141 West Jackson Boulevard, Chicago 4, Illinois

A. R. Maas Chemical Co., Division 4570 Ardine Street, South Gate, Calif.

When inquiring check CP 1041 on handy form, pgs. 2-3

dered films, sheets, non-rigid extrusions, plastisols, organosols, coatings, solutions, and rigid extrusions. Included in the line are:

Barium cadmium (12-V-5, 128-V-5): Latest two developments of effectively modified co-precipitated laurates for high heat and light stabilization. Fine white powders.

Cadmium (2-V-4, 2-V-7): Organic complexes for outstanding clarity. Clear pale liquids. Frequently used with barium and organic stabilizers.

Barium (1-V-4): White powdered highly compatible barium compound. Does not bloom or plate-out of calendered stocks. Improves viscosity stability in plastisols. Frequently used with cadmium stabilizers with or without organic assistants.

Organic (8-V-3, 8-V-5): Organic non-polymeric clear stabilizer assistants for use with barium-cadmium or cadmium stabilizers to further increase heat and light stabilizing efficiency.

Organic (7-V-1): Organic polymeric liquid particularly useful in extending heat stabilization. Outstanding for organosols and solution applications. Extends many times the known effectiveness of light stabilizers.

(Products of the Harshaw Chemical Company, Dept. CP, 1945 East 97th Street, Cleveland 6, Ohio . . . or reader may secure more information by checking CP 1042 on handy Reader Service slip between pages 2 and 3.)

Announce limited production for 2 higher fatty alcohols

A line of higher fatty alcohols from tallow and other fats and oils is now issuing from a semi-works unit utilizing the sodium reduction process. Limited production is reported to be underway. Products — designated as Makanols I and II — lend themselves to such applications as emollients, emulsifiers, absorption bases, intermediates, penetrants, thickeners, and similar functionaries.

Specification	Makanol I	Makanol II
Myristyl, %	6	6
Cetyl, %	27	27
Stearyl, %	15	67
Oleyl, %	50	-
Linoleyl, %	2	-
lodine number	55	4
Saponification value	2	2
Titer	42	52

Other Makanols include oleyl alcohol and alcohols from soya, fish, and linseed oils. Sulfates of the Makanols are also available. Latter combine good detergent qualities with low defatting of the skin, making them of interest for use in shampoos, heavyduty household detergents, and other liquid or solid form detergents.

(Products of the Stepan Chemical Company, Dept. CP, 3250 S. Kedzie Avenue, Chicago 23, Illinois . . . or reader may secure more information by checking CP 1043 on handy Reader Service slip between pages 2 and 3.)

DOWICIDE PRESERVATIVES CONTROL BACTERIA GROWTH IN ADHESIVES

You can prevent loss of viscosity and odor "build-up" in adhesives by using DOW industrial preservatives



The Dow Chemical Companion Department DP-33 Midland, Michigan	у
Please send me detailed PRESERVATIVES.	information on DOWICIDE
Name	
Title	
Company	
Address	
City	State

The adhesives industry is just one example where DOWICIDE® PRESERVATIVES solved a serious mold and bacteria problem. Working with Dow's technical staff, this industry was able to suppress damaging mold and bacteria growth in water-soluble, starch-based adhesives during the manufacturing, storage and use periods. Today, DOWICIDE PRESERVATIVES are giving adhesives of all kinds longer life and greater sales appeal.

DOWICIDE PRESERVATIVES are controlling mold and bacteria for a variety of industries including textile, leather, latex paint, paper, lumber and many others.

Whether you are developing a new product or changing an old one, DOWICIDE PRESERVATIVES may contribute to its manufacturing and sales success.

Call upon Dow for a solution to your mold and bacteria problems. Write today for more information about these industrial preservatives. The DOW CHEMICAL COMPANY, Midland, Michigan.

you can depend on **DOW CHEMICALS**



Half-second viscosity brings butyrate lacquers into finishing fields

Cellulose acetate butyrate isn't new by a long shot, but when you speak of half-second viscosity cellulose acetate butyrate . . . that is news! Development of this low viscosity polymer is big news in terms of wood lacquers, metal finishes, paper finishes, etc.

Until very recently, butyrates have had too heavy a viscosity to be of much interest in the finishing field.

The half-second butyrate produces excellent wood lacquers, it is reported. Such lacquers afford a higher degree of protection against ultraviolet light than nitrate lacquers — a particularly important factor in blond furniture finishes where



Spraying lacquers containing up to seventeen percent solids made from half-second collulose acetate buty-rate have good color stability, resistance to weathering, and they will withstand water immersion without whitening or peeling

direct sunlight causes nitrate finishes to darken. The half-second butyrate lacquers withstand 10 "cold check" cycles, demonstrating at least a partial solution to furniture manufacturers' problem of surface checking brought about by rapid temperature changes.

As far as metal lacquers go, half-second butyrate types exhibit considerably greater resistance to weathering than nitrate types, and in addition retain their initially low color longer. Lacquers neither whiten during underwater immersion tests, nor blister or peel as do nitrate lacquers under the same conditions.

Butyrate finishes were shown to be far less flammable than nitrate finishes. Unlike nitrate finishes that must be shipped wet with solvent, the raw



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EACH OTHER

SOLKA-FLOC is the one cellulose form that lets you take full advantage of the most modern types of machinery because-

- 1. SOLKA-FLOC is the newest and most modern form of cellulose.
- 2. SOLKA-FLOC is free-flowing and has unusually high density which allows you to handle more alkali cellulose in your process than do other forms of cellulose.
- 3. SOLKA-FLOC reacts far faster, gives you up to 50% greater production per man hour.
- 4. SOLKA-FLOC handles much easier, and widens the range of products that can be made from cellu-

Learn more about SOLKA-FLOC and how it can help you get the most out of modern equipment. Write for information and samples to Dept. FB-5, at Boston.

Prompt shipment guaranteed -pounds to carloads.



COMPANY, Berlin, New Hampshire CORPORATION, La Tuque, Quebec

General Sales Offices: 150 Causeway Street, Boston 14, Mass. Dominion Square Bldg., Montreal, Quebec

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When inquiring check CP 1045 on handy form, pgs. 2-3

half-second butyrate can be handled as a dry powder with complete safety.

Specific applications are suggested as follows: tough and transparent paper coatings highly resistant to grease; lacquers for such plastics as acrylics, cellophane, phenolics, and polystyrene; peelable plastic coatings for the packaging industry; heat sealing adhesive coatings; and hot melt coating compositions.

(Half-second viscosity cellulose acetate butyrate is a development of Eastman Chemical Products, Inc., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . or for more information check CP 1046 on handy Reader Service slip between pages 2 and 3.)

Defines colloidal carbon as — invaluable soot

Thirty-page booklet describes the many-sided nature of colloidal carbon. Reprinted from the Journal of Chemical Education, article goes into considerable detail on uses and properties of colloidal carbon. Tables, graphs, and illustrations supplement text on — to use the author's words invaluable soot.

Volume XI, No. 4 is issued by Columbian Carbon Co., Dept. CP, 41 E. 42nd St., New York 17, N. Y. When inquiring specify CP 1047 on handy form, pages 2 and 3.

Announce resin for laminating paper, fabrics, wood, glass, plastics and metals

For lamination of paper, canvas, fabrics and fibers, metal foil, wood, glass, plastic sheets, and metal plates.

Description: Alk-O-Flex Number 47 Resin can be handled in the same way as phenolic, urea, and melamine resin glues. Before lamination, the resin must be thoroughly mixed with a cross-linking agent. It can be applied by knife, roller coater, extrusion, or hot-spraying with a proportioning spray gun for addition of the cross-linking agent. Laminating pressures are from 0 to 75 psi, but higher pressures may be advantageous.

Resin has 100% solids by weight, weighs 8.85 lb/ gal at 77°F, and has a specific gravity of 1.05 at that temperature. Color on the 1933 Gardner scale is 5-6; acid value, on solids, is 0.0-0.5. Resin is compatible with all pigments, is soluble in ketones, acetates, aromatic hydrocarbons, and Cellosolves, and is insoluble in aliphatic hydrocarbons, and alcohols. It can be stored indefinitely at room temperature (without the cross-linking agent). Gardner-Holdt viscosity of 60% solution in MEK, and without cross-linking agent, is D-E at 77° F.

(Alk-O-Flex 47 is made by Alkydol Laboratories, Inc., Dept. CP, 3242 S. 50th Ave., Cicero 50, Ill. . . or for more information check CP 1048 on handy form, pages 2 and 3.)



TRACE METAL TROUBLES

Infinitesimal as they may be, Trace Metals may cause all kinds of coatly complications. In industrial processes and products they spoil chemicals, soaps, textiles, dyes, rubber, hides, foodstuffs, metals, plastics, paints, adhesives, drugs, pharmaceuticals, fertilizers, and dozens of other things as well. Recent intensive research on trace metal deficiency in agriculture and medicine now furnishes profound clues to the causes of sickness, health and well-being in living things. Control through chelation is the remedial action indicated.

VERSENE - POWERFUL CHELATING AGENT

As a powerful chelating agent, it is Versene's job to make trace metals tractable. It keeps them under precise control. Properly used, one or more of the Versenes and the chemistry of chelation can correct excesses or deficiencies of metallic ions. Whenever these trace metal disturbances occur they are ready to rush to your rescue.

COMPLEXING POWER GUARANTEED UNIFORM

The Versenes are extremely stable at high temperatures throughout the pH range. Made only under processes originated, developed and patented by F. C. Bersworth, uniformity of complexing power is guaranteed in either sample or carload quantities. Write Dept. X. Ask for Technical Bulletin No. 2 and samples. Chemical Counsel available.

VERSENE WATER TEST KIT. Tells total hardness in 2 minutes. Accurate to on. Complete with instructions. \$5.00 postpaid.



WAREHOUSE STOCKS
Providence Agent: George Mann & Co., Inc., 251 Fox Point Boulevard, Providence, R.I.,
W. Coast Agent: Griffin Chemical Co., Son Francisco, Los Angeles
Midwest Agent: Kraft Chemical Co., Inc., 917 W. 18th Street, Chicago
Wastath Chemical Co., Salt Lake City, Utoh
Southwest Agents: Barada & Page, Inc., Dallos, Houston, Kansas City, etc.
Chas S. Tanner Co., 1815 Liberty Life Bidg., Charlotte, North Carelina
Siegel Chemical Co., Brooklyn, N. Y.

When inquiring check CP 1049 on handy form, pgs. 2-3

Making glass fiber mats in weights from two to 10 oz/sq ft . . .

plastic reinforcing material also made as cloth in widths to 150"; no binder used

Uses: Glass fiber mat and cloth are intended for use in reinforced plastics. Possible end uses for such plastics include electrical panel boards, building materials, boat hulls, trays, tanks, helmets, truck and auto body sections, radomes, etc.

Features: Mats are available in weights from 2 to 10 ounces per square foot (but other specs can be met). The heavier mats eliminate need for laminating lighter mats together in fabricating. Mats are uniform, are made to close tolerances, and do not have any contaminating material or chemical binder which may limit use to certain types of resin, reduce translucence or hurt drapability.

The glass fiber cloth is made in widths to 150".

Description: Mats and cloth are now being produced in limited amounts. Roving or filament can be arranged in the Bigelow manufacturing process to meet a wide range of specifications. Mat-making process is similar to that employed in manufacture of certain types of non-woven floor covering.

(Maker is Bigelow Glass Fiber Products, Bigelow-Sanford Carpet Company, Dept. CP, 140 Madison Ave., New York 16, N. Y. . . . or for more information check CP 1050 on handy Reader Service slip between pages 2 and 3.)

99% pure vapor phase silica shows usefulness and versatility in many fields . . .

company has arranged to import and sell commercial quantities of compound

Uses: Rubber—Reinforcing agent. Data from rubber formulations of a preliminary nature show that the compound effects a marked stiffening of uncured stocks and a relatively high hardness of cured vulcanizates. Lower loadings than are normal for carbon black and other fillers are indicated to obtain comparable properties.

Greases, pastes, ointments, and creams—Thickening and gelling agent in all types of liquids. Any product consistency from a thin fluid up to a heavy paste can be prepared by adding the compound in varying proportions. It imparts temperature stability in lubricating greases, and its inert nature and high chemical purity are important in the pharmaceutical and cosmetic industries in the formulation of creams, ointments and pastes. In the field of vinyl plastigels, it is a colorless gelling agent.

Paint, varnish, and printing ink—In addition to functioning with these products as a thickening and gelling agent, compound acts as an emulsion stabilizer, pigment stabilizing agent, and flatting agent.

Thermal insulating material—As it contains 97-98 volume % voids, it functions as an effective thermal insulation material. Coefficients of thermal conduc-

for your information... brief summaries of helpful product news

PENTACHLOROPHENOL and Its Sodium Salt Outstanding Industrial Preservatives

Pentachlorophenol,

Molecular Wt.: 266.35 Formula: OH



Specifications: Dark, grayish flakes; crystallizing point 174.0° C. min.; alkali insoluble material 1.0% max.; assay 96.0% min.; pine oil solution NPA 5.5 max.

Sodium Pentachlorophenate,

Molecular Wt.: 288.36 Formula: ONa



Specifications: Light tan powder, pellets or briquettes. Assay 88.0% min. Free alkali (as NaOH) 0.5-0.9%.

Two of the most versatile and widely used chlorinated phenols manufactured by Monsanto are pentachlorophenol, technical, and sodium pentachlorophenate, technical. The sodium salt bears the trade name, Santobrite.*

As a wood preservative, penta is outstanding. It is being used by railroads, utilities, private industry, and in farm and home construction, to protect wood against rot and insect attack.

Railroads cut maintenance and repair costs by using penta to preserve car decking, switch-ties,



platform decking and other installations. In hospitals and public buildings, penta-treated lumber is used for sills, subflooring and roof plank. Penta is applied most effectively at commercial treating plants by an economical pressure process. The preservative, in petroleum oil, is forced deep into the cells of the wood. As rain or ground water will not wash out the penta, service life of the wood is extended three to five times over that of untreated wood.

Plywood adhesives of the coldpress type are treated with penta to make them resistant to mold and bacterial action, under specifications of the Douglas Fir Plywood Association.

Weed killing is another application of penta. It is a nonselective herbicide for eliminating plant growth on roadsides, rights of way, etc. It is also a desiccant for preharvest drying of crops such as cotton.

For a booklet on Penta as a wood preservative, mail the coupon.

Santobrite Proved Effective Against Microorganisms



Monsanto Santobrite, the sodium salt of penta, is also distinguished by its versatility and service to diverse industries.

In cooling systems Santobrite is a highly effective means of controlling slime and algae which cause serious fouling of water passages and heat transfer surfaces if allowed to grow unchecked.



In the pulp and paper industry Santobrite provides an efficient way of controlling microorganisms which cause slime spots, blinded wires, plugged felts, obstructed stock and water lines.

Hardwood and insulating board, when treated with Santobrite or penta, will resist rot, mold and insect attack. Mold is generally a problem when insulating board is used in the decoration of basement rooms or rathskellers, or in any hot, moist area.

Other applications for Santobrite include its use in killing microorganisms which cause deterioration in adhesives, leather, casein and oil paints and rubber latex.

Interesting experiments with Santobrite have been conducted by Army, Navy and Public Health officials in a campaign to eradicate certain species of snails. In China, Egypt, Africa, Brazil and other countries, snails act as intermediate hosts for schistosomes,

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Santo Count

Straw suscep

which cause the fatal disease, schistosomiasis, in humans. Santobrite has proved to be an efficient chemical for controlling the snails.

Santobrite Sprays Used **For Effective Weed Control**

Santobrite is now being used for pre-emergence weed control.

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Its use in this application has several advantages. It is economical and can be formulated as a dry mix or water concentrate. Monsanto's sodium pentachlorophenate is not a hormone-type weed killer and there is little danger from spray drift.

Moreover, Santobrite will provide effective weed control during periods of high ground moisture when mechanical methods are impractical or impossible.

For more information, send in the coupon.

Monsanto Offers Booklet For Fertilizer Manufacturers



A new booklet of interest to the fertilizer industry has been recently published by Monsanto.

An eight-page brochure entitled, "Questions and Answers on the Use of Santomerse* in Mixed Goods Fertilizers," it gives clear, concise information on how Santomerse can reduce caking in bin and bag and cut curing time.

For your copy send in the coupon today.

Santomerse Cuts Mold Count in Fruit Washing

Strawberries, among the most susceptible of fruits to mold, have now been effectively washed using a technique developed jointly by researchers of the University of Tennessee and Monsanto Chemical Company.

Mold count reductions ranging up to more than fifty per centa figure which may mean the difference between profit or loss to the grower and processorhave been obtained by the new method.

Since strawberries are among the most difficult of fruits to clean and process due to the rough texture of the surface, it is assumed that the new washing technique will be equally effective in lowering mold count in other fruits susceptible to the problem.

The results were obtained by the addition of small amounts of Monsanto's Santomerse D, or Sterox*CD detergents to the wash water. Both gave good detergency results, and the Santomerse solution had the added advantage of imparting slight bactericidal activity to the wash water.

The tests were carried out initially in the laboratory. During the last growing season, the work was carried on in regular processing lines with a variety of conventional washing equipment.

Controlled Leavening, Long Shelf Life with Monsanto SAPP

Please send:

As prepared mixes increase their sales in the baking field, leavening becomes more important than ever before. To sell such mixes the manufacturer must be certain of a product which has a long shelf life and uniform leavening action.

Monsanto SAPP (sodium acid pyrophosphate) has already proved its ability by actual use in a wide number of prepared cake mixes. Manufacturers find that they obtain several advantages.

Monsanto SAPP gives a uniform rate of reaction with a carefully controlled release of gas. It also possesses a long shelf life and gives good volume and texture in the final product.

For more information on how Monsanto SAPP can help in your cake and doughnut mixes, use the coupon on this page.

New Compounds Safer. Less Costly to Ship Than Gaseous Phosgene

Two new Monsanto intermediates, Carbamyl Chloride and Isopropyl Chlorocarbonate, are designed for basic chemical manufacturers who need phosgene intermediates but wish to avoid the inconvenience and expense of handling gaseous phosgene directly.

In-plant handling and storage problems have been minimized by means of new shipping techniques that are safe yet economical.

Call the Monsanto office near you for complete information. Meanwhile, check the coupon below for descriptive bulletin.

4/53

Penta Answer Booklet Bulletin, Santobrite for pre-emergence Bulletin O-23, Santobrite

MONSANTO CHEMICAL COMPANY

1702 South Second Street, St. Louis 4, Missouri

Santomerse for Fruit Washing Questions and Answers on the Use of Santomerse in Mixed Goods Fertilizers Phosgene Compounds, P-150

Name.....Title..... Company..... Street.... City......Zone.....State......

When inquiring check CP 1051 on handy form, pgs. 2-3

tivity, K, for a number of temperatures are tabulated in table below:

32 68 104 140 176 212 Temp, °F .015 .016 .018 .020 .024 .028

Miscellaneous--Compound can be used as an anticaking agent to improve the free-flowing properties of various powdered materials. Water dispersions are easily prepared for use in emulsion paint, paper, latex, and other uses requiring aqueous systems. A number of applications have been reported in the insecticide, adhesive, floor wax, and also in the electrical industries.

Features: High purity-contains 99% pure silicon dioxide; small particle size; large surface area; and easy dispersibility.

Description: Aerosil is a vapor phase silica which is produced in a rapid high temperature flame process as a white "soot" in a manner to the formation of carbon black. Its properties are tabulated in table below:

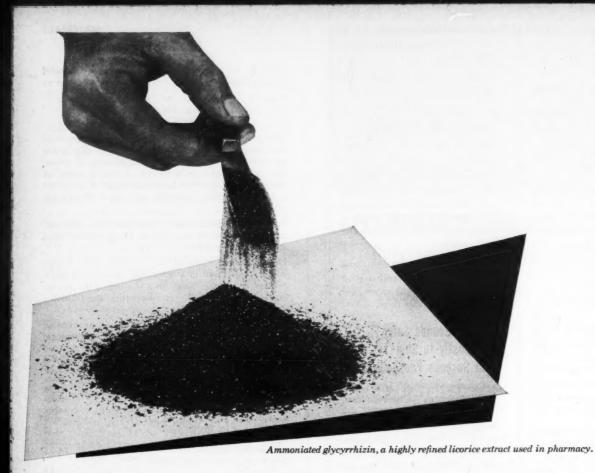
SiO2 (moisture-free basis), % Particle size range, microns 0.015-0.020 Surface area (BET-N2 adsorption method) 175-200 sq m/gm Specific gravity 2.1-2.2 Color white Refractive index Fe₂0₂, % CaO, MgO 0.004 Done Acidity value (m.e. NaOH to pH 7) 0.04 Free moisture @ 105°C, % 1.75 Ignition loss @ 1000°C, % 2.5 Bulk density, lb/cu ft 2.5-3.5 Bulk density (compressed grade). lb/cu ft pH (10% aqueous dispersion) 4.5-6.0 Oil absorption (Gardner method), lb/100 lb pigment

(Aerosil is a product developed by Degussa (Deutche-Gold-und Silber-Scheideanstalt Vermals Roessler) located in Frankfort, Germany. A research and patent licensing agreement has been arranged with Degussa by Godfrey L. Cabot, Inc. At the outset, commercial quantities for sale in this country will be imported by Cabot whose address is Dept. CP, 77 Franklin St., Boston 10, Mass. . . . or for more information check CP 1052 on handy Reader Service slip between pages 2 and 3.)

Digests use info on seven classes of industrial chemicals

Eight-page catalog digests data on seven classes of industrial chemicals - sorbitol, surfactants, mannitol, solid polyester resins, fatty acids, plasticizers, and activated carbons. Principal properties and uses of the chemicals in various industries are illustrated with drawings, charts, and diagrams.

Bulletin on industrial chemicals is available from Atlas Powder Company, Dept. CP, 904 Market Street, Wilmington 99, Delaware. When inquiring reader may simply specify CP 1053 on convenient Reader Service slip between pages two and three.



LICORICE may one day fill a need in your business

More facts about licorice of value to industry – perhaps to your business, too – have been uncovered through *research* in the past 40 years than were unfolded in the natural course of events during the preceding 4000 years.

Some of these facts may one day have a bearing, profitwise, on your own operations. Would you like to investigate?

Research disclosed that glycyrrhizin, a component of licorice extract, produces a foam of rare stability, one that has world-wide use today in many types of beverages. And research was responsible for Flotite, extracted from the "spent root," and put to valuable service as a wetting agent and as a colloidal stabilizer for certain types of dispersions. Do these uses suggest an adaptation to your field of activity?

The pharmaceutical industry has long utilized extracts of the ancient "sweet root"; and the tobacco industry in the United States consumes over 20,000,000 pounds of licorice yearly as a conditioner and mellowing agent. Research lies back of it all.

We hope that the applications of licorice named in this space will suggest some challenging idea for your own business. Write for further information. We don't have all the answers, but we do have the licorice and the licorice derivatives, plus the know-how, to help you find them.

Some New or Potential Uses for Licorice And Licorice Derivatives

Flavor for ice cream • Antioxidant to keep chewing gum fresh • Prolonging foam in porter and ale • Soft drink flavor • Aging and mellowing smoking pipes • Improving meat and fish sauces Therapeutic agent in treatment of Addison's disease • Component in feeds for horses, cattle and chickens • Soothing ingredient in cough syrups Stabilizing acid latex • Flotation agent in ore separation.



Write today for your free copy of "The Story of Licorice." We will mail it promptly. You're sure to find it interesting, and you might find it profitable as well.



MACANDREWS & FORBES COMPANY

Licorice and Licorice Products • Since 1870 200 Fifth Avenue, New York 10, N.Y. Plant: Camden, New Jersey

When inquiring check CP 1054 on handy form, pgs. 2-3

Paper is sized with synthetic under either alkaline or acid conditions . . .

this treatment widens applications for the paper, and lessens its tendency to curl

Uses: Synthetic sizing agent for paper. Can be used in both alkaline and acid stocks, and is especially effective as a beater additive when water, high ink, acid, and alkali resistance specifications must be met.

Features: Can be fixed in the paper under alkaline conditions. No rosin, wax or alum need be used with the size, but the size can be applied to the surfaces of rosin sized paper for added effect. Paper sized with the synthetic is said to be more durable and applicable to a wider range of uses than paper sized by other means, and is not as subject to curl.

Description: Sizing agent, Cyron, is easily prepared for mill use by dissolving in hot water and adding the solution to the slush stock or to the surfaces of the paper.

Cyron-sized paper can be used to wrap moist soap, which causes a condition that can destroy rosin sizing in paper. It is also advantageous in papers from which cement bags are made, since acidic papers are frequently degraded when the hot cement is packaged in the bags. A neutral paper sized with the agent can be used to wrap steel instruments which are susceptible to corrosion when wrapped in acidic papers. Cyrontreated label papers won't rust tin cans either.

(Cyron is a development of Paper Chemicals Department, American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 1055 on handy form, pages 2 and 3.)

Fluid nature of resin adhesive adds to its usefulness in impregnations . . .

heat-curing product said to be especially effective where curing temps reach 266° F

Uses: Fluid heat-curing adhesive and impregnating resin for brushing, spraying, dipping, or roller coating. Thinned with toluol, methl ethyl ketone, Cellusolve, or acetone to suit specific applications. Has been used for motor and transformer laminations, coil impregnation, sapphire tips on aluminum phonograph needles, plastic-metal laminations, and grinding wheels. Also used for impregnating papers, or to form foils for subsequent jointing.

In laminating, it is necessary merely to coat one side of a sheet. The resin does not adhere to Teflon, polyethylene, Kel-F, polyvinyl films, nor does it adhere to most silicones.

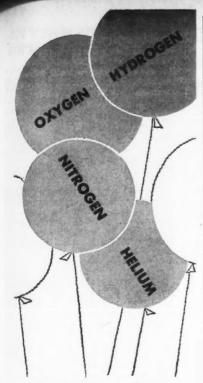
Features: Fluid nature of the resin makes it more suitable than solid or paste forms, and where there is the possibility of elevating the curing temperature to at least 266° F.

Resin is reported to be comparatively non-toxic. There is no solvent for the cured product.

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MAGNOLIA AIRCO

supplies the southwest!

Magnolia Airco gases and liquids . . . rare gas mixtures . . . xenon . . . krypton . . . and neon conform to specification. You can count on their purity and consistent uniformity—every shipment packaged to your requirement!

Consult your nearest Magnolia Airco office for full details.



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A Division of Air Reduction Company, Incorporated Beaumont • Corpus Christi • Dallas • El Paso Fort Worth • Hobbs • Houston • Oklahoma City San Antonio • Shreveport • Tulsa • Wichita Falls Southwestern Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories.

at the frontiers of progress you'll find



When inquiring check CP 1056 on handy form, pgs. 2-3

Description: Araldite AN-115 is supplied as approximately 60% solids content. It may be used in this form, or diluted with any of the before-mentioned solvents. Only precaution in use of solvent is that operator must allow sufficent drying time before making joint.

Curing of the adhesive can be effected over the following schedule: 14 hr @ 266° F to 10 min @ 428°F

(Product of Ciba Company, Inc., Dept. CP, 627 Greenwich St., New York 14, New York . . . or for more information check CP 1057 on handy form, pages 2 and 3.)

Affords zero static in synthetic textiles

An antistatic agent being offered to processors of synthetic textiles is reported to afford zero-static protection at the point of application. Effectiveness is said to last through normal processing time. Silver Lube A.S., as it has been designated, gives good cohesion, softening, and lubricity. Utilization is not accompanied by rancidity, odor, or discoloration. It is compatible with water soluble tints; rinsibility is said to be excellent.

Formulation recommended is 1 part Silver Lube A.S. to 3 parts warm water. Pickup is not less than 2% on dry weight of yarn or cloth.

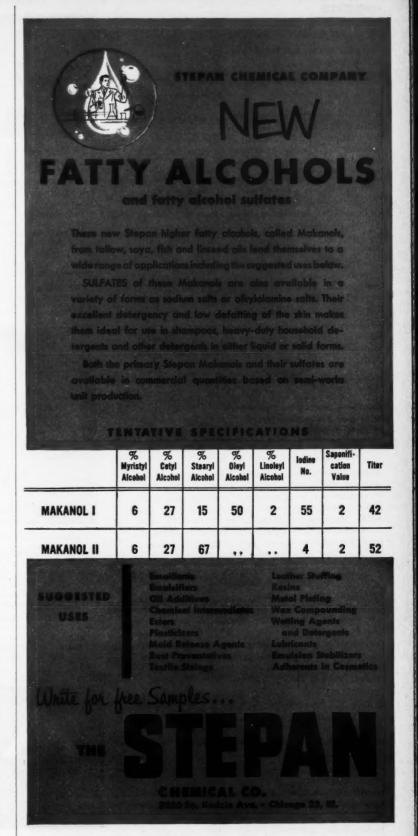
(Product of The Carolina Aniline & Extract Company, Dept. CP, Charlotte 1, North Carolina . . . or for more information reader may simply check CP 1058 on handy Reader Service slip between pages two and three.)

Presents standards on petroleum products and lubricants

Standards on petroleum products and lubricants are presented in 831-page book. This publication is the 1952 compilation of ASTM standards, which includes test methods and specifications widely used in this field.

Compilation covers the following broad classifications of petroleum products: crude petroleum; butadiene; motor and aviation fuels; petroleum solvents and naphthas; diesel fuels; distillate burner fuels; kerosene and illuminating oils; lubricating oils; turbine oils; electrical insulating oils; plant spray oils and petroleum sulfonates; lubricating greases; and petrolatums and paraffin waxes. Included also are standard specifications for ASTM thermometers, and test method standardization applicable to etched-stem, liquid-in-glass type thermometers.

To obtain "ASTM Standards on Petroleum Products and Lubricants" remit \$5.75 (paper cover) or \$6.40 (cloth cover) per copy direct to American Society for Testing Materials, Dept. CP, 1916 Race St., Philadelphia 3, Pa. When inquiring about this publication simply check CP 1059 on handy form, pages 2 and 3.



When inquiring check CP 1060 on handy form, pgs. 2-3

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Suggest numerous uses for nitrilotriacetic acid

Suggested as possible metal complexing agent, chelating agent in electroplating field, and as agent for effecting separation of rare earths. It retards the setting when added to gypsum. Can be used as a stabilizer for perborates in detergent preparation. The neutral salts are reported to improve the dyeing properties of acid and substantive colors on leather.

Some bismuth complexes have potential value as pharmaceuticals. Some esters have found utilization as plasticizers for polyvinyl chloride, others as plasticizers for shellac, nitrocellulose, cellulose acetate, and methacrylates.

Description: Nitrilotriacetic acid is a technically pure (98% minimum) white crystalline powder, melting at 240°C with decomposition, insoluble in water (0.15g/100cc @ 25°C) and in the common organic solvents. NTA dissolves in mineral acid and also forms mono, di, and tri basic salts which are soluble in water.

(Product of the Alrose Chemical Company, Dept. CP, Providence 1, Rhode Island . . . or for more information check CP 1061 on handy form, pages 2 and 3.)

Combine corrosion resistance with good workability in new alloy . . .

see utilization in processing equipment where pH varies widely, temps are high

A new corrosion-resistant alloy is the outcome of an intensive development program to find an alloy that, in addition to being corrosion resistant, has good high-temperature properties and is easy to form and weld. Hastelloy F appears to be the answer. The nickel-base alloy is reported to be intermediate in price, corrosion resistance, and workability, between the austenitic steels and the alloys made of nickelmolybdenum.

Corrosion Resistance

Sulfuric acid: Alloy F has excellent resistance to boiling 10% sulfuric acid. It has good resistance to air free sulfuric acid in concentrations up to 30% and at temperatures up to 176°F. High chromium content increases its passivity when air or oxidizers are present in the acid. It is not recommended for use in boiling sulfuric acid in concentrations which exceed 20%.

Seventy percent concentrations Phosphoric acid: of this acid, at the boiling point, can be handled by the alloy. Boiling 85% concentrations, however, will corrode it rapidly. Corrosion rates are affected when dissolved copper or other metallic ions that inhibit the action of the acid are present.

5% Ferric chloride + 10% sodium chloride: Alloy F has good resistance to pitting in this solution, even though chromium bearing alloys are usually pitted.

42% Magnesium Chloride Solutions: Specimens of Hastelloy F were exposed to this solution at the boiling point, and stresses equal to the yield point of



OIL-WETTING CHARACTERISTICS LEAD TO NEW WATER-REPELLENT APPLICA-TIONS FOR SURFACE-ACTIVE AMINES

By Dr. M. R. McCorkle, Technical Director, Armour Chemical Division

Some of the most interesting applications for Armour's cationic, surface-active pri-mary and secondary amines – Armeens and Duomeens-come about due to their oilwetting characteristics. In being adsorbed on negatively charged surfaces, these amines leave their hydrocarbon "tails" extending out to present an organophilic or hydrophobic surface. Thus the fatty amines and their salts can be used to impart water-repellent, organophilic characteristics to many types of surfaces, including metals, asbestos, cement, glass, etc.

The addition of Duomeen T Dioleate to structural-type paints definitely prothis solution is added to the vehicle to pro-

The panel shown was coated with a red lead alkyd finish containing 1/2% Duomeen T Dioleate, scored, and exposed to winter elements for 6 months. Careful examination of this panel shows almost no corrosion, and the Duomeen even prevented pitting and undercutting. At the end of the test, rusting of control panels was far

nating of cellulose fiber boards with molten asphalt. 0.2% Duomeen T added to the

vide 0.25% to 1% Duomeen T Dioleate based on total pigment content.

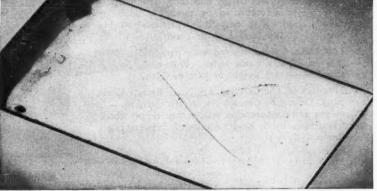
Another Duomeen improves the impreg-

may be important.

for your own testing and evaluation. Send the coupon today with your letterhead for these samples and current price quotations.



The Armids are a group of high molecular weight amides, derived from fatty acids, that are covered in a new technical booklet. In general, the Armids are among the more versatile derivatives of fatty acids. Profitable applications for them have been found in many fields, such as the manufacture of plastics, pressure-sensitive tapes, molded rubber products, protective coatings, printing inks, water repellents-to mention only a few. The booklet cover both the chemical properties of the Armids and their applications. Check the coupon for your free copy of this valuable booklet.



Duomeen T Dioleate in this alkyd prevented pitting or undercutting of scored panel.

longs the life of the finish. The rust inhibiting properties which the Duomeen imparts to the paint protect the surface from corrosion. In addition, paints made with Duomeen T Dioleate show exceptional anti-settling and anti-skinning properties.

The Duomeen T Dioleate is introduced into a paint formulation at the time of grinding. A concentrated solution (25%) of the Duomeen salt in aromatic and aliphatic solvents is prepared. Enough of mix in the treating tank imparts excellent anti-tack properties and improves fiber wetting. Similarly, Duomeen T added to asphalt in small amounts improves the mix when incorporating asbestive fibers or fillers, and it cuts down on blending time. This is particularly helpful when the fibers are damp and tend to lump.

Send the coupon for a booklet on the Duomeens and free samples of both Duomeen T and Duomeen T Dioleate.

@ ARNOUR AND COMPANY



ARQUADS® 12 AND 18 PROVE VAL-**UABLE AS DESTATICIZING AGENTS**

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Recently one of the largest chemical companies conducted a series of tests on de staticizing agents for polystyrene plastica It is their opinion that Arquads 12 and 18 are two of the most effective destaticizing agents they have tested.

Arquads are a series of quaternary ammonium salts which exhibit high surface activity. These are cationic chemical compatible with cationic and nonionic materials. Both are soluble in water and

The tests were conducted by coating polystyrene wall tile with 1% solutions of the Arquads in 50/50 distilled water/inpropyl alcohol solutions. The treated tile were rubbed for one-half minute period with dry cleaning tissue, and examined for static charge. Arquad 12 and Arquad 18 both required more than 50 repetitions of this test before the tile showed a charge.

Other tests, conducted with treated tile held at 130°F. for one week, indicated Arquad 18 is effective as an anti-static agent for polystyrene at high temperatures.

Although similar testing on Saran plastic indicated the effectiveness of the Arquads as anti-static agents, caution must be exercised in utilizing Arquads in any textiletype application where discoloration of Saran due to extreme heat or light exposure

Samples of both Arquads are available



fiable cont maximum . Send the for free san to begin yo of this eff available i minum tar drums. Cu request on

NEW LOW-COST FATTY ACID FOR NON-YELLOWING VINYL CHLORIDE POLYMER STABILIZERS

VAL-

ENTS

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The popularity of many vinyl chloride polymer-type products depends on their stability. There is an ever-increasing demand for products which have improved resistance to the yellowing caused by the action of heat and/or light.

It has been the practice in the past to use as a stabilizer metallic soaps of stearic acid or low purity mixed coco fatty acids, containing varying amounts of stearic, oleic and linoleic fatty acids. However, soaps of these acids are not completely ompatible with the plastics, and result in "blooming" or cloudy films. And the presence of unsaturated fatty acids contributes to undesirable yellowing or, in pigmented films, results in off-shade colors.

Neo-Fat 280—a new, low-cost fractionally distilled fatty acid—is outstanding for this application. Its soaps are compatible with vinyl plastics and so do not contribute to cloudy films. Stabilizers based on Neo-Fat 280 are extremely resistant to water leaching in vinyl films. Finally, the high acid value, low moisture and low unsaponifable content of this fatty acid insure a maximum of metal per pound of stabilizer.

Send the coupon with your letterhead for free samples of Neo-Fat 280 with which to begin your own testing and evaluation of this efficient, low-cost material. It is available in 4,000- and 8,000-gallon aluminum tank-cars and also in 55-gallon drums. Current prices will be quoted on request on your letterhead.

NEW HIGHER PURITY COCO FRACTIONS FIND WIDE ACCEPTANCE

A short while ago, the Armour Chemical Division announced that the purity standards had been raised on its line of fractionally distilled coconut oil fatty acids. Minimum concentration is now 92%! Because this is a degree of purity never before commercially available, these Neo-Fats have become more popular than ever.

The Armour-developed fractional distillation process makes available to you the specific fatty acid you require. Ordinary distilled coconut oil fatty acids are mixtures of up to nine different acids, in percentages varying from 0.5% to 48%. Each of these component acids has its own

specific chemical and physical properties which make it valuable for some uses but unsatisfactory for others. When you buy from Armour, you get the specific acid you need, rather than a mixture of up to nine different ones.

The chart below gives the new specifications for these Neo-Fats. At the same time that purity standards were raised, the iodine value of these acids has been lowered and the color lightened.

Send the coupon with your letterhead for a free copy of our new specification chart which includes all pertinent information on these acids.

		lodine		Acid Value	i	iller, C.	Color, Lovibond 5 1/4"	Caprole	Caprylic	Capric	Laurie	Myristic	Palmitic
	Min.	Max.	Min.	Max.	Min.	Max.		1 %	%	%	%	%	1%
Neo-Fat 8 (caprylic acid)	-	1.0	387	392	-	16°	2 R-20 Y	3	93	4			
Neo-Fat 10 (capric acid)	-	1.0	323	329	28°	33°	2 R-20 Y		3	92	5		
Neo-Fat 12 (lauric acid)	-	1.0	278	282	41°	44°	1.0 R-10 Y			1	95	4	
Neo-Fat 14 myristic acid)	-	1.0	243	249	48°	52°	1.0 R-10 Y				3	94	:

NEW SOLVENT CRYSTALLIZED OLEIC ACIDS

Armour's new low-temperature solvent crystallization process, using a solvent which does not react with the raw materials, produces ester-free oleic acids which are resistant to oxidation and rancidity. Even high temperature processing will not cause breakdown, and products made with Armour oleics may be stored for long periods without losing their freshness or fragrance. The extremely low temperatures employed guarantee a substantially lower saturated fatty acid content. Other features not found in ordinary distilled or pressed oleic acids are excellent color, low unsaponifiable content and high acid value.

Here are our oleic acids: Low Titer Red Oil (Neo-Fat 94-04), 8-11° Red Oil (Neo-Fat 94-10), Saponified Red Oil (Neo-Fat 88-18), Low Titer White Oleic (Neo-Fat 92-04), 8-11° White Oleic (Neo-Fat 92-10), and C. P. White Oleic (Neo-Fat 90-14).

These acids are available in 55-gallon drums and tank cars. Send the coupon for specifications and prices.

"ARMOX" NEW TRADE NAME FOR ARMOUR INDUSTRIAL OILS

The Industrial Oils Department of the Armour Chemical Division has announced that its line of industrial oils will be sold under the trade name, "Armox." Animal oils have been winning back customers who had substituted petroleum sulphonates, vegetable oils, sperm oils, etc. If you are now using one of these, it will pay you to consider our "Armox" line. Write today for prices and specifications.

	Arquads 12 and 18			
	Neo-Fat 280			4.
Send literature:	"Armids" booklet	☐ Duomeen	s booklet	Mary .
	Arquads 12 and 18 p	orices 🔲	Neo-Fat 280	prices
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When inquiring check CP 1062 on handy form, pgs. 2-3

the alloy were applied. No cracking occurred after 500 hours exposure. This is of particular interest since the same combination of exposure and stress will cause cracking in austenitic alloys that depend upon passivity for their corrosion resistance.

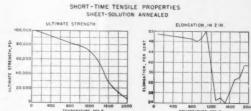
Nitric acid: An ascending corrosion rate with time is exhibited by the alloy when exposed to boiling 65% nitric acid.

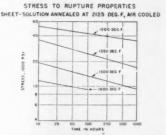
Sea water: Samples of Alloy F have been exposed to sea water for a period of 25 months. Examined at periods of 6, 13, and 25 months, the results showed that Alloy F has good resistance to pitting. After 6 months the alloy was found susceptible to under-gasket corrosion. However, at the expiration of 25 months, no further pitting had taken place and the original pits had not enlarged significantly.

Equipment made of the alloy for use in sea water should be designed to minimize crevices and contact areas that form regions of low oxygen concentration.

Mechanical Properties

Alloy F is stronger and about half as tough as the austenitic stainless steels. It is ductile enough for





Charts showing short time tensile properties and stress-rupture properties of Hastelloy F sheet

power to deform than austenitic stainless steels. intricate cold-forming operations, but requires more

Welding Characteristics

Can be welded by the metallic arc, inert gas shielded arc, and resistance welding methods.

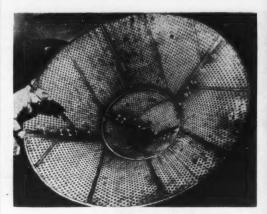
Applications

Alloy F has been subjected to more than 3 years' service in the top vapor zone of a sulfite digester, with excellent results. The strong cooking liquor in the digester centained about 10% sulfur dioxide.

New pulping duplex processes requiring weak and strong acids or sulfurous acid for the first part of the cook, and an alkaline condition for the final part

(Continued on next page)





Lower cone of Hastelloy F Smithlined digester

of the cook, appear to be an ideal place to utilize Alloy F. Some of these processes start with a pH 4 or lower, and end up with about pH 9.

Service tests show corrosion rates of less than 0.001"/yr for Hastelloy F in both alkaline and acid pulping digesters in either the liquid or vapor phase. These tests cover a variety of pulping woods and cooking conditions. The alloy is especially good for service in the vapor phase where corrosion of other alloys has been high, maker reports.

(Hastelloy F is a development of the Haynes Stellite division of Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd Street, New York 17, New York . . . or for more information check CP 1064 on handy form, pages 2 and 3.)

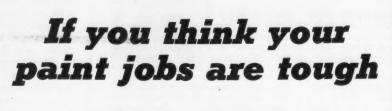
Points out properties of versatile insecticide

Chemical and physical properties of lindane, a versatile insecticide, are discussed in 30-page booklet. Text outlines its broad fields of usefulness against many insects, and tells of numerous ways in which lindane can be formulated into a finished insecticide.

Material is said to be valuable because of its high toxicity to insects, yet low chronic toxicity to man and animals. Lindane is derived from the related insecticide, benzene hexachloride or BHC. There are many formulations for material. Booklet includes current military specifications for lindane-based insecticides.

Also featured is an 11-page table of suggested uses, which lists form and dosage of insecticide for each specific application, as well as instructions as to when and how it should be applied. Other sections in booklet discuss subjects of toxicity, analytical methods, and shipping and labeling requirements for lindane.

Booklet on lindane is issued by the Ethyl Corp., Dept. CP, 100 Park Ave., New York 17, N. Y. When inquiring specify CP 1065 on handy form, pages 2 and 3.



If you place the orders or approve the bills for jobs like this, you know how painting costs break down. And you know that the cost of even the best paint is only a small part of the total—nowhere near what it saves by adding extra years between repainting. That's why so much quality aluminum paint is used for jobs like this.

Because aluminum paint is the first choice for many industrial applications, special formulas have been developed. Paints made to these formulas last longer, cover better, stand up under corrosive industrial smoke and fumes.

If you have plants, structures or equipment that need paint, it will pay you to find out more about the kinds of aluminum paints now available. We do not make paint. But, as the leading suppliers of aluminum pigments to paint manufacturers, we want you to get the best results from the aluminum paint you buy.

Write us about your paint problems and we'll recommend the kind of paint to use. We'll also send you a copy of *Painting with Aluminum*. It is packed with facts and answers to all types of industrial painting questions. Write Paint Service Bureau, Aluminum Company of America, 1790-E Alcoa Building, Pittsburgh 19, Pennsylvania.

Alcoa



ALUMINUM COMPANY OF AMERICA

"SEE IT NOW" with Edward R. Murrow—CBS-TV every Sunday
... brings the world to your armchair. Consult your newspaper for local time and channel.



When inquiring check CP 1063 on handy form, pgs. 2-3

S.I. CHEMICAL

A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries

First Fatty Alcohol Plant

Metallic sodium will soon be instrumental in making an important new series of products available to the detergent field, according to a recent announcement. The products are longchain fatty alcohols, which are obtained from tallow through a reduction reaction with sodium. Production of these materials, the first in this country, is scheduled to begin shortly in a new plant with a capacity of 1.5 million pounds per year.

The present process is scaled to batches requiring one drum of sodium at a time. The sodium is melted, dispersed in toluene, and added to a mixture of tallow, methyl isobutylcarbinol, and toluene in a reactor. Reduction is carried out at 110-115° C. under a blanket of nitrogen. The reaction splits the tallow glycerides, yielding a mixture of caustic, glycerine, fatty alcohols, and solvent. Components of the mixture are separated in a settling tank, after which the fatty alcohols are purified by vacuum distillation.

Detergents, including new bar detergents, are expected to be the chief outlets for the alcohols. Other markets are seen in water repellents, plastics, oil additives, and cos-

Find Rare Earth Metals **Make Good Paint Driers**

The rare earth metals have entered the paint drier field with good results, it was revealed at a recent technical meeting. According to the report, investigators obtained what was termed startling results in white refrigerator enamel with a solution of rare earth naphthenate consisting of 50 per cent cerium and 50 per cent lathanum. Field tests on epon resins, styrenated alkyds, silicones, and oleoresinous baking alkyds are said to have confirmed laboratory results of cleaner, tougher, better adhering films. Improved soap and water resistance is also claimed.

To Use Sodium Reduction in U.S.I.'s Newest Chemical To Save Scarce Hand Labor In Nation's Cotton Fields

CIPC Now Available to Herbicide Formulators; Applied to Soil During Planting, Chemical Controls Crab Grass, Other Weeds, in Cotton

U.S.I.'s most recent addition to its chemical line, CIPC, is expected to play an increasingly important part in reducing the cost of controlling weeds in the





Left: Weed control results after application of CIPC at the rate of two pounds per acre. No manual weeding has been required. Right: Untreated check plot in the same field. Plants in both pictures are, bottom to top, green beans, corn, peanuts, soybeans, and cotton.

Return of Wastes to Soil Termed Essential | nation's future cotton crops. According to the National Cotton Council, a substantial

Inorganics, Conditioners Not Complete Replacements for Soil Losses; Relationship Seen Between Organics and Antibiotic Formation in Soil

In a recent paper on the general subject of returning wastes to the soil, it was pointed out that there are indications of a direct relationship between the return of organic matter to the soil and the formation of antibiotics in the ground. This was declared to be an entirely new concept in the control of plant diseases. One example cited was recent work which showed soil-borne parasites to have been suppressed by heavy manuring of infected soils with organic matter.

Farm Wastes A Rich Source of Organics With continued vigorous cultivation of the land, organic matter has been vanishing from our soils in spite of great mechanical and

technological achievements in agriculture. Half the tonnage of our food production above the ground is inedible to man and is usually wasted, it was said. It has been estimated that several hundred million tons of crop residues and agricultural wastes, which are not used for chemurgic or feeding purposes, remain on farms each year.

Listeners were reminded that organic matter exerts beneficial effects on the physical, chemical, and biological properties of soil, and that inorganics alone are not enough to keep the soil at peak produc-

tivity. It was recommended that under practical conditions

MORE

part of the cost of producing cotton is made up of expenditures for weed control - which must be done largely by hand hoeing operations. Increased labor requirements as well as growing shortages of labor have sharply increased these costs in recent years. Competition for the steadily decreasing labor force in the South is expected to drive them still higher in the future. CIPC is seen by many as a solution to the problem.

CIPC "Weeds As You Seed"

CIPC, designated chemically as isopropyl N-(3-chlorophenyl) carbamaty as isopropyl relative of IPC, another useful herbicide which U.S.I. began producing commercially last year. Like IPC, it is primarily a pre-emergence herbicide, i.e., it works best when applied to the soil before the

weed seeds germinate, or shortly thereafter. In certain

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Weed Control

cases, however, CIPC can also be used to advantage in post-emergent applications. Once in the soil, CIPC appears to disrupt cell division within susceptible plants, after which the plant stops growing and dies. CIPC

is most effective when it is applied at the same time the seed is sown.

CIPC, like IPC, is manufactured by U.S.I. for use by herbicide formulators. The company does not supply finished farm herbicides. Provides Effective Control of Crab Grass

Tests by the U.S. Department of Agriculture and others have shown CIPC to be an effective herbicide against many annual weedy grasses and broad-leaved plants, and at the same time to have little or no effect on certain valuable plants. For example, it is particularly effective against the weed enemies of cotton, including crab grass, which is perhaps the worst and most difficult to kill, but it does not harm the cotton itself. In some cases, one application of CIPC makes further weed eradication unnecessary.

If applied to the soil when the cotton is sown, CIPC provides efficient, dependable control of weeds and reduces or entirely eliminates hoeing operations. Thus, it is expected to greatly reduce hand labor requirements and to cut weed control costs for the cotton planter.

Curtails Dangers of Over-Cultivation Another advantage seen for the new "weed as you seed" herbicides, such as IPC and CIPC, is that they reduce the danger of adversely affecting crop yields through overcultivation. For example, too deep and too frequent cultivations of cotton have definitely been shown to reduce cotton yields. Chemical weed control eliminates this possibility as well as the mechanical injuries which often

accompany the most careful cultivations.

CIPC Effective for Other Crops In addition to cotton, tests have shown sovbeans, peanuts, lima beans and snap beans to have considerable tolerance to pre-emergence applications of CIPC. Post-emergence applications have given good results in the control of chickweed and annual weedy grasses in stands of pure alfalfa.

CONTINUED Organic Wastes

there should be a regular cycle whereby some of the nutriment taken from the soil by plants is later reverted to the soil.

Role of Composts Emphasized

Composting was emphasized as an age-old but still highly effective method for treating wastes before returning them to the soil. Composting, it was stated, results in biological stabilization of organic matter so that it has greater utility in improving the physical nature of soil particles. It has been found that preliminary decomposition of organic matter can be hastened in the composting process by addition of distillery molasses residues or fertilizers. Finished composts are applied at the rate of three to four tons of dry matter per acre and can be used in farm practice as a substitute for manures.

A need was expressed for much more basic knowledge concerning microbially derived fractions of soil organic matter before various theories can be clarified. The author predicted, however, that additional research will show that the return of organic matter to the soil is economically sound as well as most necessary for conservation and maintenance of soil fer-

Fungus-Proof Paints, Tests Covered in New Bulletins

Fungus-proof paints, and chemicals for achieving them, are subjects of two recent bulletins. The first, a Government publication, is an outgrowth of an Army project to develop a mold-resistant paint for use in tropical climates. Investigators developed a new laboratory test which they say is rapid and which gives results that can be duplicated. The test is described in the report, along with results of tests of some 80 fungicidal chemicals.

The second bulletin reviews several chemicals which protect paints and painted surfaces against mildew and mold. Methods are suggested for utilizing them to preserve water base paints, latex and other emulsion paints, and both natural and synthetic oil paints.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

A new sealing compound for boots, windows, concrete cracks, etc., contains no asphalt or tars, is claimed to be a permanently pliable product which "sticks to anything" without cracking, chipping, or drying out. (No. 920)

Can you use colloidal sodium in your chemical processes? New techniques make the metal available in layers 1 to 5 atoms thick on free-flowing inert carriers. Advantages include faster, safer, more easily controlled reactions.

One guart of a new sludge solvent per 1000 gallons of fuel oil is claimed to keep sludge dis-solved in the oil, thereby keeping burner tips and screens cleaner and improving combustion.

To bleach the natural color from an approximately wood, a new compound is available which is quick acting, requires no neutralization, leaves no deposit, and does not raise the grain or warp companying states. (No. 923) To bleach the natural color from all types of

Kits containing interlocking plastic bricks and model accessories have been introduced for hobbyists, potential home-builders, and archi-tects interested in scale models of houses.

Increased resistance to chemicals at elevated temperatures is claimed for a new synthetic hard rubber compound, available as pipe, fittings, sheets, rods, tubes, and molded paris. (No. 925)

A heavy bodied emulsion-type adhesive has been developed for adhering transparent rubber hydrochloride films to porous surfaces such as Kraft, glassine and other papers and boards, according to the manufacturer. (No. 928)

wax, a new synthetic is said to compare favor-chly in gel formation and film hardness, and to have added advantages of uniformity, toughness, flexibility, and lower cost. As a complete or partial substitute for Carnauba

A new glass fabric which stretches while the yarns remain stable has been developed for use as a base for reinforced, low-pressure molded plastic products having compound curves.

A surfacing material for interiors of chemical, metal, and food plants, when troweled on concrete, is said to cure to a hard, dense, stone-like, corrosion-proof surface, resistant to solvents, acids, and alkalis.

PRODUCTS OF U.S.I.

RESINS (Synthetic and Natural)

ALCOHOLS Amyl Alcehol (Isoamyl Alcehol) Butanol (Normal-Butyl Alcehol) Fusel Oil—Refined Amyl Alcohol (Isoamyl Alcohol)

Butanol (Normal-Butyl Alcohol)

Fusel Oil—Refined

Prepanel (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol) Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular
and anhydrous formulas
Pure—190 proof U.S.P.,
Absolute—200 Proof
Solars—proprietare, a lumin Solox*-proprietary solvent-

regular and anhydrous ANTI-FREEZE Super Pyro* Anti-Freeze U.S.I. Permanent Anti-Freeze

Ethyl Ether, U.S.P. Ethyl Ether, Absolute—A.C.S. ACETONE-A.C.S.

ANSOLS Ansol* M Ansol* PR

ACETIC ESTERS Amyl Acetate—C -Commercial **Butyl Acetate** Ethyl Acetate—all grades Normal-Propyl Acetate

OXALIC ESTERS Dibutyl Oxalate Diethyl Oxalate PHTHALIC ESTERS Diamyl Phthalate Dibutyl Phthalate

OTHER ESTERS Diethyl Carbonate

Arochem*—modified types
Arodure*—urea-formaldehyde resins
Arofene*—pure phenolics
Aroflat*—for special flat finishes Aroflint*-room temperature Aronint*—room temperature curing phenolic Aroplaz*—alkyds and allied materials Aropal*—copolymer modified alkyds Ester Gums—all types Natural Resins—all standard grades INSECTICIDE MATERIALS

CPR Concentrates: Liquid & Dust Piperony! Butoxide
Piperony! Cyclonene
Pyrenone* Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust Rotenone Products: Liquid and Dust INSECTIFUGE MATERIALS Indalone*
Triple-Mix Repellents

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide Ethyl Acetoacetate Ethyl Benzoylacetate Ethyl Sodium Oxalac FEED PRODUCTS Oxalacetate Calcium Pantothenate (Feed Grade) Choline Chloride

Curbay B-G*
DL.Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay* U.S.I. Vitamin B₁₂ and
Antibiotic Feed Supplements
Vacatone* 40
OTHER PRODUCTS

Acetaldehyde Caustic Soda Ethylene IPC (Isopropyl-N-Phenyl Carbamate) CIPC Liquid Chlorine

Metallic Sodium
Methionine (Pharm.)
Nitrocellulose Solns.
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.
**Pac. U.S. Pat. *Reg. U.S. Pat. Off.

NDUSTRIAL CHEMICALS LO **Division of National Distillers Products Corporation**

120 BROADWAY, NEW YORK 5, N. Y.

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Brominating with crystals safer, controllable

Now available in commercial quantities is a brominating and oxidizing agent — designated as Brom 55 (dibromo dimethyl hydantoin) - reported to be safe to handle and ship.

Brom 55 is expected to find utility in many research and commercial applications where liquid bromine is now being used. It is a crystalline powder containing 55% bromine combined with an organic carrier. It is reported that the bromine can be released under strict control to attain desired reactions and minimize side reactions.

Refrigeration while in storage is unnecessary. Packaging is in ordinary fiber drums.

(Product of McKesson & Robbins, Inc., Dept. CP, 155 East 44th St., New York 17, N. Y. . . . or for more information check CP 1066 on handy Reader Service slip between pages 2 and 3.)

Peroxide bleaching of pulps told

High density bleaching of pulps with hydrogen peroxide is subject of 31-page bulletin. Various process applications for groundwood sulfite, sulfate, soda, and other pulp types are cited. Manufacturer's own high density processes and equipment used for steeping, steam bleaching, pulp dryer steeping, and other techniques are described.

Tables, drawings, and a bibliography supplement the text. Bul 48 is issued by Buffalo Electro-Chemical Co., Inc., (Becco Sales Corp. is parent company.) Dept. CP, Station B, Buffalo 7, N. Y. When inquiring about this publication specify CP 1067 on handy Reader Service slip between pages two and three.

For more information on product at right, specify CP 1068 see information request blank between pages 2 - 3.





For more information on product at left, specify CP 1069 see information request blank between pages 2 - 3.

MOVING TOWARD NEW SOLUTIONS*

NIALK® Carbonate of Potash

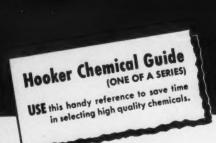
With its increased solubility and superior lubricating properties, NIALK Carbonate of Potash is widely used as a dye extender in printing pastes for the finest of printed fabrics.

Backed by constant research, produced with the strictest attention to quality control, this NIALK productlike every NIALK product-meets industry's most exacting specifications.

NIAGARA ALKALI COMPANY

NIALK LIQUID CHLORINE T NIALK CAUSTIC POTASH





HOOKER ALUMINUM CHLORIDE ANTIMONY TRICHLORIDE

PROPERTIES

Aluminum Chloride (Sublimables in air at 950°C.) 98.5% Min. Iron 0.05% Max. Heat of Solution 550 small cal/gm

SCREEN SIZES

Extra Fine Grind—An unscreened material, 90 to 95% passing 40 mesh.

Fine Grind—An unscreened material, practically all passing 20 mesh.

Coarse Grind—An unscreened material, 1 mesh and finer, containing 25 to 35% finer than 20 mesh.

Coarse Screened—Same as coarse grind, screened to remove 20 mesh and finer.

USES

Catalyst: For Friedel-Crafts synthesis, isomerization, alkylation, polymerization, halogenation.

End Products: Plastics, resins, high octane gasoline, lubricants, lube additives, synthetic rubber, dyes, photographic chemicals, pharmaceuticals, etc.

Fluxing Agent: For aluminum refining and aluminum casting.

ANTIMONY TRICHLORIDE

ALUMINUM CHLORIDE

Form: Anhydrous, gray crystalline solid,

supplied in four standard sizes

lecular Weight: 133.3

Synonym: Antimonous chloride Formula: SbCl3 Form: Anhydraus, yellowish solid Molecular Weight: 228.1

PROPERTIES

antimony Trichloride 99% Min
ron and Arsenic
ead 0%
Aelting Point

USES

Catalyst: Dyes, pharmaceuticals, petrochemicals.

Antimony Salts: Mordant in cotton printing.

Metal Treating: Antimony plating, bronzing

For detailed information on items listed, drop us a note on your letterhead. Address your request to HOOKER ELECTROCHEMICAL COMPANY, 15 Forty-Seventh Street, Niagara Falls, New York.

HOOKER CHEMICALS

- From the Salt of the Earth –

HOOKER ELECTROCHEMICAL COMPANY

NIAGARA FALLS . TACOMA . NEW YORK . CHICAGO . LOS ANGELES

When inquiring check CP 1070 on handy form, pgs. 2-3

MATERIALS

Enhances properties of latex paints . . .

film former and protective colloid recommended for polystyrene, styrene butadiene types

Uses: Film former and high-viscosity protective colloid dispersion for formulation of polystyrene and styrene butadiene type latex paints.

Features: Said to improve the properties of latex paints from the following aspects: imparts better brushing, leveling, and flow . . . helps maintain a wet edge for better and easier lapping . . . increases adhesion and strength of dried film

. . . furnishes viscosity control . . . increases stability and improves pigment's dispersion . . . and offers good medium for grinding of pigments.

Description: Film forming properties of Franklin Dispersion #52 are responsible for strength of the paint film. Affinity for a wide variety of surfaces contributes good adhesion to the painted surface.

It is reported that the dispersion offers an economical means for raising the viscosity of paints for improving brushing, leveling, and flow properties. Dispersion prevents separation of paint constituents, either by instability or freezing and thawing. Promotes resistance in paint films after aging several weeks.

(Franklin Dispersion #52 is a product of the Franklin Glue Company, Dept. CP, Columbus 15, Ohio . . . or for more information check CP 1071 on handy form, pages 2 and 3.)

Aids level dyeing of wool, also protects fiber . . .

stable oil increases yarn spinning efficiency since it softens the wool

Uses: Dyeing assistant in acid and chrome dyeing of wool to insure levelness and penetration and to maintain brilliance of shade. Also used as an assistant in the acid fulling of wool fabrics, to obtain the necessary lubrication and to eliminate creases, besides maintaining quality and fullness of hand. Can be employed as a softener, too.

Features: Has both the property of lowering surface tension of the dye bath and affording protection to the wool fibers during dyeing, bleaching, drying, and in after-use. Material forms a stable compound with the basic group of wool, which covers the wool with a thin film of oil that cannot be rinsed off. This gives the wool the oily nourishment it needs to keep it soft and supple, and it also serves to keep the moisture in the wool for longer periods.

A lofty handle is imparted to the wool because of the softening effect, which means increased efficiency in yarn spinning.

Product does not decompose in the presence of strong acids, so there is no bad odor associated with its use.

Description: Maxitol 10 is a clear, amber, viscous liquid composed of highly sulfonated veg-

etable 27% is sualkal water epso and Wheeless

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Av CP twe etable oils. Fatty matter contains approximately 27% organically combined sulfuric anhydride. It is substantive to wool, highly resistant to acids, alkalis, salts, and hard water, readily soluble in water, and neutral in reaction. Clear solutions are formed in 25% caustic soda solution, 30% epsom salt solution, 20% common salt solution, and 5% sulfuric acid solution.

When used as a dyeing assistant, recommended dosage is 1% on weight of goods. This is added directly to the dye bath at beginning of operation. Formula for use as assistant in acid fulling is 2 oz per gal of fulling liquor. Formula for use as softener is 2% Maxitol 10 on weight of goods after scouring and washing.

(Maxitol 10 is a product of Dexter Chemical Corporation, Textile Chemical Division, Dept. CP, 819 Edgewater Rd., New York 59, N. Y. . . . or for more information check CP 1072 on convenient Reader Service slip between pages two and three.)

Tint strength of pigments is high — so is resistance to darkening outdoors

Uses: Line of chrome green pigments is for exterior finishes.

Features: High tinting strength and resistance to darkening on exposure.

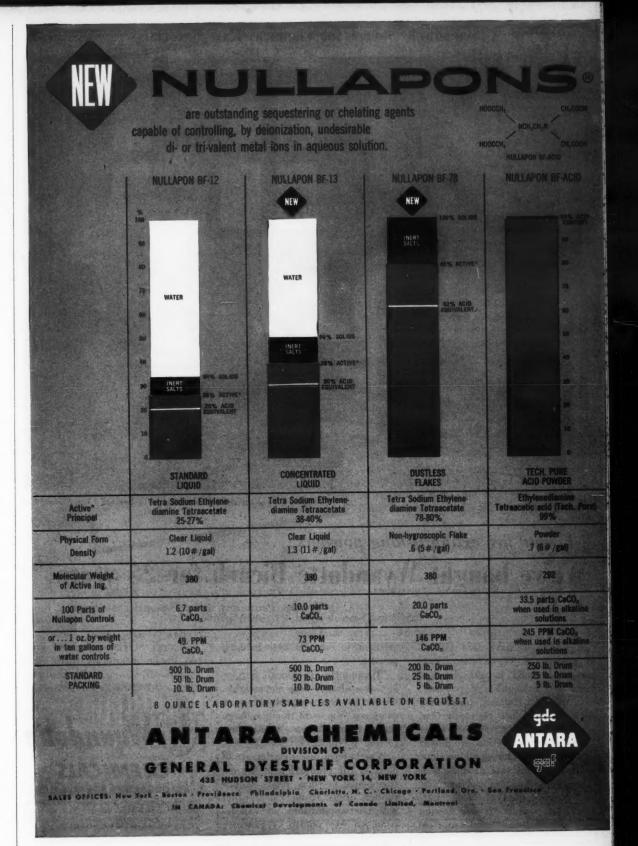
Description: Line consists of three "Willow Greens": L, M, and D. All have excellent resistance to bleeding in mineral spirits, coal tar solvents, lacquer thinner, linseed oil, and water. Some other properties follow:

	L	M	D
Specific gravity	4.50	3.60	3.02
Lb per gal	37.6	30.2	25.2
Bulking value, gal/lb	0.0266	0.0331	0.0397
Approx grinding ratio,			
% pigment	75	70	65

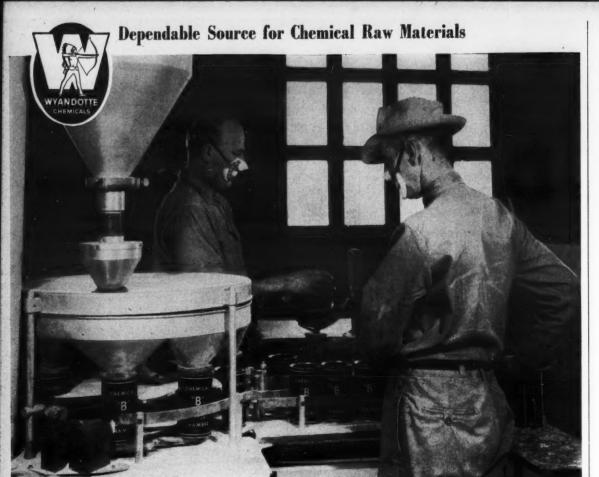
(Pigments are offered by Calco Chemical Division, American Cyanamid Company, Dept. CP, Bound Brook, N. J. . . . or for more information check CP 1073 on convenient Reader Service slip between pages 2 and 3.)

Acts as acetalizing compound or source of ethoxy-methylene

Of use to manufacturers in the vitamin, anti-malarial, hormone and dye fields is the compound described in technical data bulletin. Triethyl orthoformate can either be used as a source of the ethoxy-methylene group or it can act as an acetalizing agent. Recent price reductions by manufacturer bring it into the dollar-per-pound field. Triethyl orthoformate bulletin is issued by American-British Chemicals Supplies, Inc., Kay-Fries Chemicals, Inc., Dept. CP, 180 Madison Ave., New York, N. Y. When inquiring specify CP 1074 on convenient Reader Service slip between pages 2 and 3.



NG



Packaging fire extinguishing powder at plant of National Foam System, Inc.

"for our fire extinguishing powders...

We've bought Wyandotte Bicarb for 25 years!"

-A. D. Holmes, Purchasing Agent, National Foam System, Inc.

"Since 1928, we have used millions of pounds of Wyandotte Bicarbonate of Soda in our chemical foam fire extinguishing powder," says A. D. Holmes, purchasing agent of National Foam System, Inc., West Chester, Pa., manufacturers of fire protection equipment and chemicals. "During all this time, we have found this product consistently uniform in particle size and of good quality. These characteristics provide for easy flowing and blending when used as an ingredient in our fire extinguishing

"Wyandotte Technical Service has also always been dependable, which is very important to a company like ours doing a large international business in fire protection products."

Whether you use Bicarbonate of Soda in the production of fire extinguishing powders, foods, sponge rubber, drugs, cosmetics, or other industrial applications, you can depend on Wyandotte. Wyandotte Technical Service will help you, too. Phone or write us. Wyandotte Chemicals Corp., Wyandotte, Mich. Offices in principal cities.



HEADQUARTERS FOR ALKALIES

Soda Ash . Caustic Soda . Bicarbonate of Soda . Chlorine Calcium Carbonate - Calcium Chloride - Glycols - Synthetic Detergents • Agricultural Insecticides • Soil Conditioners
Other Organic and Inorganic Chemicals MATERIALS

Pigment dispersing properties of casein vehicle help in making latex paint . .

vehicle's wetting ability simplifies procedure for formulating the product

Casein vehicle for manufacture of latex paints.

Features: Reported to have excellent pigment wetting and dispersing properties.

Description: Aquasperse 30 has a casein content of 13% and water content of 83%. Its viscosity is 105 to 110 KU, weight per gallon is 8.75 lb, and pH is 8.7 to 9.2.

In formulating, pigment paste (with the casein) is mixed and milled, and then blended with the latex in a slow-speed paint mixer.

(Samples available from Paint Laboratories, American Resinous Chemicals Corporation, Dept. CP, 103 Foster St., Peabody, Mass. . . . or for more information check CP 1077 on handy form, pages 2 and 3.)

History, uses of aluminum sulfate recounted in booklet

Aluminum sulfate — its history, manufacture, properties, and uses - is described in this booklet. Illustrated with charts and graphs, booklet explains what aluminum sulfate (alum) is, and outlines its numerous industrial applications.

Sections of the booklet include: What is Alum?; History of Alum; Manufacture of Alum; Properties of Alum; Alum in Treatment of Industrial Water Supplies; Alum in Treatment of Industrial Wastes; Alum in the Paper and Other Industries; and Alum Handling Systems.

Booklet on aluminum sulfate is available from Industrial Chemicals Div., American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 1078 on handy form, pages 2 and 3.

Completely miscible with water, hydrocarbons . . .

four glycol ethers have big potential as specialized solvents

Some interesting and useful properties are exhibited by a series of glycol ethers being offered by this manufacturer . .

First is ethylene glycol dimethyl ether (#121) which is a colorless, medium-boiling ether of high purity. It is well suited as a substitute for ethyl ether where the high vapor pressure of ethyl ether presents a hazard. Has the unusual property of being miscible in all proportions with water and hydrocarbons, and the degree of solvent power can be greatly altered by proper dilution with water or with the common organic solvents. The product is inert to metallic sodium and is consequently a good

When inquiring check CP 1076 on handy form, pgs. 2-3

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medium for sodium condensations and Grignard reactions. Solvent power for cellulose esters is good.

Second is diethylene glycol dimethyl ether (#141)

— a solvent miscible with water and hydrocarbons.

It is suggested for use as a coupling agent. Containing no active hydrogen, it can be also used in sodium condensation and Grignard reactions.

Third is triethylene glycol dimethyl ether (#161) is a solvent recommended for gases such as sulfur dioxide, methyl chloride, acetylene, etc. Low volatility and low toxicity make it a safe solvent for many applications.

Fourth is dimethoxy tetraethylene glycol (#181), a colorless high boiling ether also of high purity. It, too, is miscible in all proportion with water and hydrocarbons. It finds use in Grignard and sodium condensation reactions, and has found successful application in the air conditioning field as well as an additive to hydrocarbon diesel fuels to improve ignition.

(Products of the Ansul & Chemical Company, Dept. CP, Marinette, Wis. . . . or for more information check CP 1079 on handy form, pages 2 and 3.)

Emulsify pesticides in hard or soft water

Uses: Intended as a highly efficient emulsifier for a number of pesticide formulations.

Features: Performs effectively under soft and hard water conditions.

Description: Emcol H-82 pesticide emulsifier is a blend of polyalcohol carboxylic esters and sulfonated oils. Components include nonionics and anionics. Some properties are tabulated below:

pH of 3% aqueous dispersion	6-7.5
Moisture, %	< 0.5
Lb/gal	8.5-8.6
Specific gravity @ 25°C	1.02-1.04

(Product of The Emulsol Corporation, Dept. CP, 59 East Madison Street, Chicago 3, Illinois . . . or for more information check CP 1080 on handy form, pages 2 and 3.)

Stresses applications for whole chemical line

Detergents, wetting agents, emulsifiers, brighteners, sequestrants, and dyeing assistants and their applications in agricultural, cosmetic, latex, leather, metal, paint, paper, rubber textile, and other specialty fields is the theme of 28-page catalog.

A new and simplified nomenclature system for maker's entire line of products is also introduced in the catalog. Complete line catalog is issued by Antara Chemicals division of the General Dyestuff Corporation, Dept. CP, 435 Hudson Street, New York 14, New York. When inquiring specify CP 1081 on handy form, pages 2 and 3.



Here is an interesting dibasic acid you should investigate

Du Pont Diglycolic Acid is an economical dibasic acid offering interesting possibilities in many industrial applications. A white crystalline solid with 97.5% min. free acid, Du Pont Diglycolic Acid has a density of 1.58 and a melting point of 148°C.... is soluble in water, lower alcohols, acetone and dioxane to insure maximum flexibility in processing operations.

As an organic acid, this material has an ionization constant at 25° C. of K_1 =1.1x10-3... is stronger than either tartaric or formic acids, yet costs no more. Although not suitable for food use, Diglycolic Acid finds application in the manufacture of resins and plasticizers... shows promise in the preparation of acid detergents, as a sequestering agent, as the monosodium salt in buffers for pH control, in textile dyeing and in other uses.

Why not investigate the use of Du Pont Diglycolic Acid in your business? We'll be glad to send you more information on this versatile, economical dibasic acid—specifications, properties, suggested uses, etc. Just clip the coupon below, or write on your letterhead to E. l. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

GRADE AND AVAILABILITY: Du Pont Diglycolic Acid—a white crystalline solid with 97.5% min. free acid—is available in multiwall paper bags containing 50 lbs. net weight.

Serving Industry with Idea-Chemicals

AMIDES . ALCOHOLS . ESTERS . ORGANIC ACIDS . SOLVENTS . RESINS



Polychemicals

DEPARTMENT

CHEMICALS • PLASTICS

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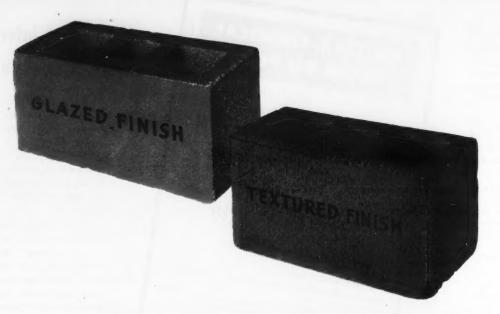
Polychemicals Department 585, Wilmington 98, Del

Please send me more information about Du Pont Diglycolic Acid—specifications, chemical and physical properties, suggested uses, bibliography, etc. I am interested in evaluating Diglycolic Acid for the following applications:

Name	Title
Firm	
Address	
City	State

When inquiring check CP 1082 on handy form, pgs. 2-3

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Pre-coated Concrete Building Blocks Slash Construction Costs, Add to Utility

Walls and interior finish completed in single-operation erection; coating is a barrier to moisture, acids, alkalis, and solvents



PLANT construction appears to be taking on a new trend since the advent of precoated concrete building blocks. The factory-

applied, ceramic-like coating that is integral with the block comes in a full range of colors and in either a glazed or textured finish. A wall and its interior finish are completed in a single cost-saving operation — there is no need for added masonry finishing operations after the wall is erected.

Kem-Kreted blocks offer a high degree of moisture, acid, alkali, and flame resistance, as well as structural strength. Cost of the pre-coated blocks is some 40% over ordinary blocks, yet approximately 40% under conventional ceramic finishes. Add to this the savings realized from single-step construction, and the economies are readily apparent.

The glazed finish provides a smooth, continuous, unbroken film over the entire coated surface of the concrete block. The surface is completely waterproof and is unaffected

KEM-KRETE CHEMICAL RESISTANCE

Reagent		Textured Coating (on transite)
3% Hydrochloric Acid (64 hr exposure)	no effect	no effect
Concentrated Hydrochloric Acid (64 hr exposure)	no effect	no effect
10% Caustic Soda (64 hr exposure)	no effect	very slight dulling
80% Caustic Soda (64 hr exposure)	no effect	very slight dulling
Gasoline (I hr exposure)	no effect	very slight dulling
Xylol (I hr exposure) Methyl Ethyl Ketone	no effect	softens
(1 hr exposure) 25% Sodium Chloride	no effect	softens
(64 hr exposure) 2% "Tide"	no effect	no effect
(64 hr exposure)	no effect	no effect
25% Trisodium Phosphate (64 hr exposure)	no effect	no effect

by washing compounds or commonly used maintenance cleaning materials. This finish is preferable for corridor walls, lower portions of walls below dado lines, etc., and where walls are subject to maintenance cleaning or washing.

The textured finish provides a finished surface which retains, to the greatest degree possible, the

natural acoustical or sounddeadening characteristics of unfinished concrete.

Neither of the two finishes are recommended, as yet, for exterior (exposed to the weather) wall

surfaces. The Editors of CHEMICAL PROCESSING interrogated a Kem-Krete spokesman on the coating's utilization for applications other than concrete blocks . . . such as on items of processing equipment, etc. We are informed that Kem-Krete is being investigated for a host of other jobs.

Chemical processors will probably be chiefly interested in the chemical and physical properties of Kem-Krete surfaces for their plants, laboratories, etc., so let's take a look at these first.

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Coating (glazed) meets ASTM Specification 126-44-T tests for acid resistance. Here, 10% hydrochloric acid is applied to the film surface and allowed to stand 64 hours. No visual effect is shown. Accompanying table shows the results of exposure tests to acids, alkalis, solvents, salts, and detergents. The glazed coating was not affected in any way; the textured coating was only very slightly affected in the same tests.

Chemical resistance of a Kem-Krete wall, of course, is limited by the chemical resistance of mortar joints. For this reason, very thin $(\frac{1}{4}-5/16'')$ joints are being recommended.

Physical Notes



As far as adhesion of the coating goes, tests have shown that it actually exceeds that of the concrete composition itself. Exposure to water at 150°F for 9 minutes causes a very slight sof-

tening, but film recovers hardness and toughness completely on cooling.

Kem-Krete coating will not sustain combustion, unaided. In particular, the glazed coating softens and burns slowly on exposure to direct flame, but extinguishes itself on removal of flame. It hardens again when cool. The textured coating is reported to char white.

Regarding mildew resistance, tests conducted according to Specification JAN-P-630 show no attack on the glazed coating.

The textured finish, because it doesn't fill the pores of the concrete surface, is said to afford very high sound absorption values.

In addition, Kem-Krete pre-coated concrete units comply with ASTM Specification 126-44-T for opacity. In this test, blue-black ink is applied liberally along a 2" edge of the glazed coating. No under-film staining is found.

Physical Specifications



Kem-Kreted blocks meet the requirements of ASTM Standard Specification (C90-44) for hollow load-bearing concrete masonry units, which are frequently quoted in federal, state, and local

building code requirements. Following specifications have been set up for coated building units:

"Resistance to crazing: A concrete block shall be coated and allowed to age six days prior to testing. The coated units shall be placed in an autoclave and the autoclave shall be brought up to gage pressure of not less than 18 psi. The temperature within the autoclave shall be at 255°F and the units shall remain in the autoclave for 60 min. The heat shall be removed and a gradual return to room temperature obtained. This test shall be repeated for 20 cycles, after which the units shall be removed from the autoclave. There shall be no visual signs of failure in the coating film.

(Continued on page 50)

ROLLS LAST LONGER



A clearly defined, uniform chill depth in Circle-Chill rolls provides maximum wear

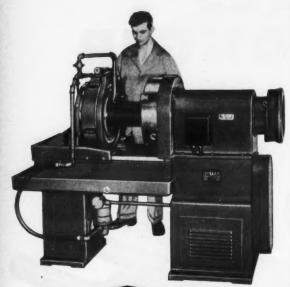
The Extra Wear built into Circle-Chill rolls gives you a bonus of many additional months of profitable milling.

The toughness of the Circle-Chill roll is the result of a recently developed centrifugal casting technique. A wearresistant, white iron shell is bonded to a softer gray iron core. Centrifugal casting makes possible a longer wearing milling surface with no soft gray iron permeation.

OTHER FACTORS IN LONGER ROLLER LIFE

In the AirSet roller mill there is no uneven roller wear. Rolls wear evenly because a high speed vibrating type feeder distributes stock uniformly over rolling surfaces. Air from a single source maintains equal pressure on both ends of rolls. When feed stops, rolls open automatically to prevent destructive metal-to-metal contact. Get complete facts from your nearby A-C sales office or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 06B7218.

AirSet and Circle-Chill are Allis-Chalmers trademarks.



THE OSTER "WILCO" IS FAST AND FLEXIBLE

It threads a wide range of pipe without die-head change

AINTENANCE threading can be a headache. MAINTENAINCE tilleading differ-You get a 4" pipe, a 2" bolt, a 6" pipe . . . different sizes, different lengths. But there's a cure for maintenance threading headaches . . . the Oster "Wilco" . . . a machine that gives you speed and flexibility at a price that's easy-on-the-budget.

You can change pipe and bolt sizes in seconds with an Oster "Wilco" because just one die-head handles them all. You thread pieces as short as 8" without a nipple chuck because the Oster "Wilco" front jaws are offset to take them. Regardless of the pipe or bolt size, the Oster "Wilco" threads and cuts off at the right speed because of its two speed motor. The Oster "Wilco" threads 4" pipe in 56 seconds and cuts it off twice as fast; it threads 1" pipe in 12 seconds.

The Oster "Wilco" is flexible, efficient, and fast. Its price is moderate . . . it's the one real answer to high quality, low cost maintenance threading.

Vour Oster Distributor can help you solve your pipe threading problems. He offers sound recommendations, speedy delivery, and dependable service . . and he stands behind the products he sells. Contact him for money saving facts, or if you don't know who he is, write us for his name and address and a free factual booklet about the Oster "Wilco".

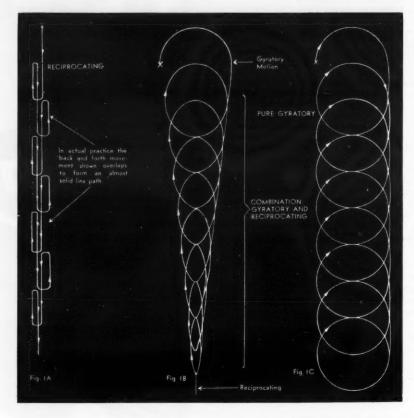




2032 East 61st St. . Cleveland 3, Ohio

1893 - CELEBRATING 60 Years Leadership in the Threading Industry - 1953

When inquiring check CP 1084 on handy form, pgs. 2-3



From left to right; reciprocal, combination reciprocal and gyratory, and pure gyratory motion. Consider all three types of motion being used en identical screens having identical characteristics such as amplitude, length of travel, etc. With the combination reciprocal and gyratory motion (IB) a particle would pass over approximately 73% more apertures than it would with straight reciprocal motion. With pure gyratory motion (IC), a particle would pass over approximately 150% more openings than it would with reciprocal and 44.4% more apertures than it would with the combination reciprocal and gyratory motion

Gyratory action increases sifter efficiency

44.4% greater opportunity for particle

to pass through screen openings

O BJECTIVE of all industrial sifting operations is to expose each particle to greatest number of screen openings. By examining basic motions which may be applied to the sifting operation, A. T.

Templin, engineer at Allis-Chalmers Mfg. Co., Milwaukee, found that, of the traditional methods used, pure gyratory motion possesses the greatest inherent efficiency possible.

That this conclusion is practical is borne out by the fact that more sifters are using this type motion than ever before.

Three fundamental types of motion can be applied

to sifting: reciprocating, gyratory, and combination of the two. Referring to the diagram, each is considered separately:

TRUE RECIPROCATING MOTION—sifter screen reciprocates back and forth in straight line, singleplane motion. A single particle, dropped anywhere on an inclined screen, will move in a straight line toward the lowest point (Fig 1A).

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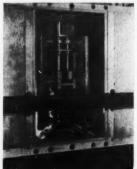
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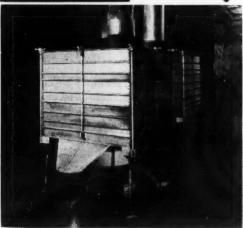
COMBINATION RECIPROCATING-GYRATORY MOTION
— this is general type used in most conventional
sifters. A gyratory motion is applied to the top, or
feed end of the screen and becomes more nearly
reciprocating toward discharge end. At head of the
screen, a particle will describe a nearly circular path.

In the same length of travel it will be exposed, not only to the same openings as before, but also to many more in either side of the straight-line path. As the particle moves away from drive end of screen, the pattern resembles a series of ever-changing ellipses until finally, over the tail end, it becomes practically a straight line (Fig 1C). Thus, as it gets away from pure gyratory motion, it passes over succeedingly fewer apertures per amplitude.



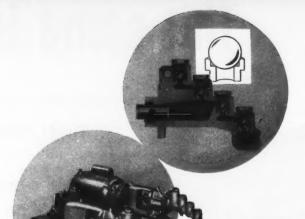
Drive mechanism of new sifter applies circular motion to entire screen area, resulting in pure gyratory motion, which was found to give maximum exposure of particles to screen openings

Sifter imparts pure gyratory motion to particles



PURE GYRATORY — here the entire screen gyrates in a pure circular motion. A particle dropped anywhere on a flat screen would move in a complete circular path. Because of forward movement (due to screen pitch and feed rate), the particle deviates slightly from a complete circle. It nevertheless maintains an almost constant diameter for full course of travel across the screen, so that particle is exposed to approximately 150% more openings than if reciprocal motion were used, and 44.4% more than with the combination reciprocal-gyratory method.

(Circle Sifter, employing gyratory motion, is manufactured by Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. . . . or for more information check CP 1085 on handy form, pages 2 and 3.)



Basic design simplicity of the
exclusive Milton Roy liquid end
step-valve assures high and
reproducible volumetric efficiency.
The self-cleaning double ball-checks
seat positively, dislodge any
trapped particles by spinning
action, are snap-acting.

Chemical Treatment Costs Drop with this Milton Roy Pump

CONTROLLED VOLUME PUMPING

INSTRUMENTATION

PROCESS CONTROL SYSTEMS

BLENDING AND FORMULATING

On The Job in a well-known chemical processing plant, this Milton Roy Motor-Driven Controlled Volume Pump meters the flow of concentrated sulphuric acid to the deoiling step in an ore flotation process. The accurate control of acid addition results in minimum usage of concentrated sulphuric acid and subsequent caustic, thereby lowering treatment costs.

This is a typical example of how Milton Roy Pumps effect dollar savings in hundreds of applications throughout industry. As motor-driven or air-powered units, or as components of automatic systems, their accuracy and long service life bring measurable returns to users.

In boiler feed water treatment, for example, they are used in all forms of handling internal or external treating chemicals; in petroleum processing, for crude desalting and gasoline treating; in textile manufacturing, for acid, alkali or bleach baths; in instrumentation, to satisfy control requirements.

These are rugged, dependable pumps. They meter practically any liquid—abrasive slurries, solids in suspension, solvents—in capacities from 3 milliliters per hour to 45 gallons per minute, against pressures up to 25,000 pounds per square inch with instrument accuracy. We invite your inquiries.



Bulletin No. 553 tells you how you can profitably use Milton Roy Motor-Driven Controlled Volume Pumps in your business. Write for your free copy.

Engineering Representatives in the United States, Canada, Mexico, Europe, Asia, South America and Africa.



Manufacturing Engineers . W. F. MANE . PHILA. 18, PA

CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

Pilot plant starts heat hardening pellets from magnetic taconite...

expected to yield commercial unit of 1500-2000 tons/day

Pilot plant work has recently been started for heat hardening of pellets from magnetic taconite concentrates. Although project is still in the early stages, production of pellets per square foot of grate area can be increased to a point where the capacity of a commercial unit of from 1500 to 2000 tons per day can be expected. Total heat consumed in tests was approximately 650,000 Btu per short ton. Btu consumption per ton of pellets should be considerably less when experimental work is complete and a commercial plant installed.

Following data was obtained during one seven hour test run. Feed from the table feeder to the pellet forming drum was 3120 lb per hour at 5% moisture. Pellets smaller than 3/8" and larger than 3/4" were screened out before leaving the drum. Pellets were then sent through a drying drum where some of the moisture picked up in the pelletizing operation was removed.

"Burning" or heat hardening of the pellets is a continuous one involving a traveling grate. Theoretical output of the pilot plant grate when traveling at 2" per minute was computed to be 1.22 short tons per hour. Actual output was 1.15 short tons per hour. This capacity is probably less than half that which will be attained when grate is run at full speed. Bulk weight of pellets entering on the grate equalled 135 lb per cu ft while that of pellets discharged from grate equalled 116 lb per cubic foot.

Final product was subjected to a tumbling test in a standard coke testing drum. Fifty pounds were put into a tumbling mill and revolved for approximately four minutes at a speed of 24 revolutions per minute. Subsequent screen analysis yielded 12% minus 10 mesh fines.

Maximum grate output must still be determined. Work is also being carried out to improve predrying of the pellets on the grate. When this factor is achieved, it is hoped that it will still further increase the output. When facili-

The same incoming power by

Fields Point Manufacturing Corporation increases

production substantially with

high-efficiency I-T-E Mechanical Rectifiers



I-T-E Mechanical Rectifiers are designed to convert ac to dc with over-all efficiency of 94% and higher.

This was the level of efficiency Fields Point's management wanted and expected from their I-T-E units. Each kilowatt of purchased power was to do maximum work in tons of chlorine output.

After five months of continuous mechanical-rectifier operation supplying d-c power to the electrolytic chlorine cell line in its Providence, R.I., plant, the company now reports production results. 10% more chlorine has been produced—with the same power! The expected high efficiency has been realized!

This Fields Point experience adds to the growing testimony that I-T-E Mechanical Rectifiers live up to their promised high efficiency. Every one of 37 units now installed—totaling more than 200,000 amperes of connected load—helps prove the point.

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Get the fo

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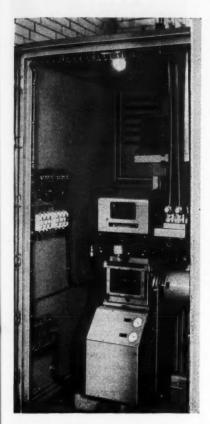
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D-C supply to the Fields Point bus is at 260 volts. Other installations give equally reliable evidence that system voltage can be any rating in the range from 50 to 400 volts—with 94% over-all efficiency or higher.

Two I-T-E Mechanical Rectifier units are shown as installed in the Providence plant of Fields Point Manufacturing Corporation. Daniel Townend, Fields Point's president, is adjusting a portable oscilloscope to let R. E. Murphy, I-T-E vice-president, observe d-c flow from the nearer unit.

but 10% more chlorine!

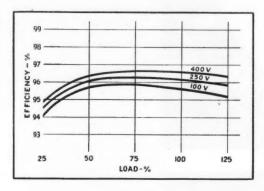


HIGH EFFICIENCY THROUGHOUT LOAD RANGE

During continuous operation at the Fields Point plant, load has remained at or very near 100%. Should load vary at any time to as low as 25% or up to 125%, over-all conversion efficiency will still be high. The LOAD-

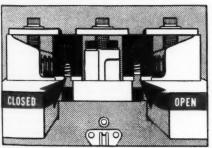
efficiency curve below is characteristic of I-T-E Mechanical Rectifier performance, and represents a principal advantage: flexibility for plant production schedules while getting the most out of a-c power purchased.

One of the two contact mechanisms in the Fields Point installation of I-T-E Mechanical Rectifiers. Each Rectifier is a standard I-T-E unit with design rating of 5000 d-c amperes.



HERE'S WHY

Here are two basic reasons why I-T-E Mechanical Rectifier users get 94 kw (and more) of d-c power for every 100 kw of a-c power they buy:

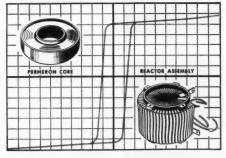


Solid silver contacts

held closed by powerful springs, give highest conductivity between a-c and d-c networks.

Sparkless low-loss commutation

is obtained by interposing a Permeron*-core reactor between a-c supply and contact mechanism. This provides a brief period during which current in a contact is zero, allowing sufficient time for sparkless contact closing or opening.



*I-T-E's special saturable core material. Typical Permeron magnetization curve is shown above.

Get the facts—If you are planning new or expanded a-c to d-c conversion facilities, it will pay you to investigate high-efficiency I-T-E Mechanical Rectifiers. They increase production or cut power bills in many kinds of applications—electrolytic chemical production, metal refining, motor load. Write for details.

BULLETIN 5106—covers theory, design, construction, standard arrangements.

BULLETIN 5204—gives details of I-T-E's special magnetic core material, *Permeron*.

BULLETIN 5205—presents engineering explanation of high efficiency provided by I-T-E Mechanical Rectifiers.



MECHANICAL RECTIFIERS

1-T-E CIRCUIT BREAKER CO. • Rectifier Division • 19th and Hamilton Streets, Philadelphia 30, Pa.

EPD-Canadian Mfg. and Sales: Eastern Power Devices, Ltd. Toronto

ties for continuously introducing concentrate into and taking pellets away from pilot plant are completed, it will be able to operate under all weather conditions. Preliminary work on hematite (nonmagnetic taconite) concentrates indicates that heat hardening to a point comparable with the magnetic form is possible but not with the pilot plant as it is now designed and operating.

(Pilot plant work is being carried out at Allis-Chalmers Mfg. Co., Department CP, 1151 S. 70th Street, Milwaukee 1, Wisconsin in cooperation with the Arthur G. McKee Company of Cleveland, Ohio.)

Company name and address

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Release 15 patents from AEC

Descriptions of 15 patents owned by the U.S. Government and held by the Atomic Energy Commission have been transmitted to the United States Patent Office for registry and listing in the official register of patents.

Items described in recently issued list include: comparative photometer, flow valve control, apparatus for fractional sublimation, filter for removing particulate matter from a gas stream, tachometer of mechanical-electronic type, process for separation of fluorocarbons, and publication concludes with a description of a remote control manipulator.

Patent List, March 17, 1953, is issued by U.S. Atomic Energy Commission, Washington 25, District of Columbia.

For more information on product at left, specify CP 1087
. . . see information request blank between pages 2 - 3.



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When inquiring check CP 1088 on handy form, pgs. 2-3

Precoated Concrete

(Continued from page 45)

"Imperviousness test: Blue-black ink shall be heavily applied to the surface of the units. The ink shall be permitted to remain on the surface for 5 min and then shall be flushed with soapy water and removed with a cloth. There shall be little or no visual remains of stain on the surface.

"Falling ball test: The materials shall be tested by dropping a 100-gram steel ball a distance of 38

> centimeters onto the surface of the coating. There shall be no film disturbance visually apparent.

> "Freezing and thawing: Blocks coated with finish material shall

be soaked 18 hr in water and then placed in refrigeration unit at -20°F and remain 51/2 days. No film failure shall occur. A block coated with finish material shall be water soaked for 18 hr and placed in a refrigerator for 1 hr at -20°F. At the end of that period, the block shall be allowed to reach room temperature for one hour. After 20 cycles, the film shall show no failure."

Who Does Coating

Kem-Krete pre-coated building units are being manufactured by licensees. Production equipment for the coating operation is being made by Krete Koater Service, Hillsboro, Illinois, and is sold to qualified block producers licensed to apply Kem-Krete finishes.

(Kem-Krete is a development of Sherwin-Williams Company, Dept. CP, 101 Prospect Avenue NW, Cleveland, Ohio . . . or for more information check CP 1089 on handy form, pages 2 and 3.)

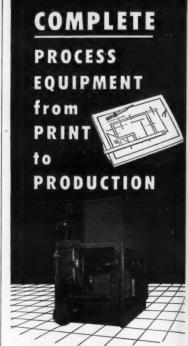
Can work 100,000 times as fast as trained computer using electric calculator . . .

> AVIDAC can multiply 999,999,999,999 by itself in as little as 1/1000th of a second

Successful operation of a new electronic digital computer, designed and constructed by staff members of the Physics Division of Argonne National Laboratory at a cost of \$250,000, was announced recently. Known as the AVIDAC, the new computer is expected to facilitate the solution of mathematical problems of Argonne scientists engaged in reactor engineering and theoretical physics research work. In the past, the lack of such a computing device has meant that many complex problems had to be solved by time-consuming methods or by the use of existing machines in other parts of the country.

Design of the computer is based on a machine recently constructed at the Institute for Advance Study at Princeton University. Thus, the name AVIDAC means "Argonne's Version of the Institute's Digital Automatic Computer." Engineers and electronic experts who designed and constructed the AVIDAC state that it can work approximately 100,000 times as fast as a trained computer using a desk-type electric calculating machine.

Basically, the AVIDAC consists of four parts, namely (1) an input-output section where the problems are



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What is your processing problem?

Cold, heat, high pressure, vacuum or moisture in any combination? Bowser custom engineered equipment can provide the right

Temperatures obtainable range from -100° F. or colder to +550° F. or more; moisture control from absolute minimum to saturation; and pressures from one micron to 500 p.s.i. and greater.

In addition to production models, Bowser's experienced technicians also design and construct laboratory size units to test process factors under consideration, and pilot-run models to assure maximum efficiency and economy.

Bowser provides complete processing equipment and engi-

Write for further information or ask for a field engineer.

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When inquiring check CP 1090 on handy form, pgs. 2-3

fed into the machine and where the answers will come out; (2) a control section which tells the other



Checking an electronic circuit in the arithmetic unit of Argonne National Laboratory's new digital computer. Arithmetic unit measures 10 x 21/2 x 7' in size and contains about 1500 electronic tubes. At lower right, a perforated tape which contains the answer to a problem leaves the machine

parts of the machine what to do, how to do it, and in what order the work shall be done; (3) an arithmetic unit which performs additions, subtractions, multiplications, divisions and other arithmetical and logical operations; and (4) the memory unit.

In operation, a message or problem is prepared on a modified teletype instrument and is fed into the AVIDAC's memory unit. The control section regulates the flow of information from the memory unit to the arithmetic unit and back again as the course of the computation requires. It also sends the answer out to a paper tape at the output end of the arithmetical unit.

In the next step, the tape is "translated" into numbers and characters by a teletype page printer. Like most modern digital computers, the AVIDAC uses the binary arithmetical system as opposed to the standard decimal system.

The machine handles numbers of forty binary digits in length, which is equivalent to about 12 decimal digits, so that the computer can perform arithmetic operations on numbers as large as 999,999,999,999. Information can be fed into the memory unit in as little as 15/1,000,000ths of a second. When needed, this information can be withdrawn from the memory unit and transferred to the arithmetic unit in the same period of time.

Multiplication and division are automatically reduced to a sequence of additions in the "brain." The machine can multiply 12-digit numbers, such as 999,999, 999,999 by 999,999,999 in as little as

(Continued on next page)



The famous Jabsco neoprene impeller, self-priming pump—generally recognized as the pump which delivers more liquid within its pressure range than any other pump in its weight, size and price class—is now available in hard rubber construction for handling acids, alkalies and other corrosive solutions at moderate cost.

High capacity—the new Ace-Jabsco pump delivers 15 gpm. at 22 ft. head, ranging to 5 gpm. at 72 ft. head. It is suitable for alkalies, solutions of metallic salts, inorganic acids, hydrochloric acid any strength, and many other corrosives. It pumps thick or thin liquids.

Self-priming – starts instantly against suction lifts up to 6 ft. without a foot valve. Will lift as much as 14 ft. on suction side when primed. Self-lubricated flexible neoprene impeller outlasts conventional metal rotors and can be removed simply by taking off cover plate.



Made by American Hard Rubber Company—where quality has been a heritage for 101 years in the production of rubber-protected tanks, pumps, valves, fittings, pipe, utensils, and other equipment of rubber or plastics for industry.

ACE rubber and plastic products

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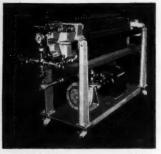
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MORE THAN A HALF CENTURY OF "KNOW-HOW" IN DESIGN AND MANUFACTURE OF FILTRATION EQUIPMENT





Shriver stainless steel, washing type filter press, complete with feed pump, on portable stand.

The performance history of thousands upon thousands in service today and the unabated demand for more to meet the needs of expanding process industries prove Shriver Filter Presses -

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When inquiring check CP 1092 on handy form, pgs. 2-3

IDEAS

(Continued from preceding page)

1/1000th of a second. The addition of two 12-digit decimal numbers takes place in about 10/1,000,-000ths of a second. A difficult mathematical problem which might take 20 minutes for the AVIDAC to complete would take, perhaps, three years for two mathematicians to do with desk-type electric calculators.

The AVIDAC is a complex instrument - containing 2500 electronic tubes, about 8000 resistors and at least three and one-half miles of electrical wire. Yet, it is exceedingly compact. The principal unit (arithmetic unit) is only 10 x 21/2 x 7 feet in size. There is, in addition, the memory unit (14 x 21/2 x 41/2 feet) and the two teletype machines.



Operator is shown feeding a perforated paper tape containing a problem and orders into the memory unit. The problems and order for solving them are punched by a modified teletype machine. As required for the solution of a problem, the information stored in the memory unit is automatically transferred to the arithmetic unit

The memory unit consists principally of forty 5-inch cathode ray tubes (similar to television picture tubes) which can store a total of 1024 12-digit decimal numbers. Power for the computer is obtained from a bank of 335 cells of storage battery which are constantly being recharged. In addition, the filament heating power is obtained from the regular building service. The total amount of power involved is approximately twenty kilowatts.

(Information courtesy of Argonne National Laboratory (Operated by the U. of Chicago for the U. S. Atomic Energy Commission), P. O. Box 299, Lemont, Ill.)

> VISCOSITIES of various materials are given . . . page 210



For Any Type of Equipment

New FEON fabrics, specially woven of Nylon, Dupont Orlon®, or Dynel for dry separation of corrosive and hot materials, now make possible tremendous savings. Under severe conditions, FEON synthetics last ten to thirty times longer than ordinary filter fabrics. One user reports over \$15,000 saved in one year!

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When inquiring check CP 1093 on handy form, pgs. 2-3

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Scarce metals available after the AEC

There will be an extension of the Defense Production Act, as far as controls over materials. production, and distribution are concerned. However, the Controlled Materials Plan is dead - unless the international situation gets worse.

This means manufacturers will scramble for steel, copper and aluminum left after the military and the Atomic Energy Commission are taken care of. However, under current plans, if a serious bottleneck develops in a program essential to the national defense - and the above suppliers fall into that category the Govt. would lend help.

In such a case, plans call for what is termed "directive" assistance. Mills would be told to place the neglected order. The new freedom will not apply to nickel or nickel-bearing stainless steel which will be controlled for almost the foreseeable future. The new freedom becomes effective July 1. In the meantime, CMP tickets are supposed to be cashed. Where more metal is available in the hands of either mills or distributors, unrated orders can be filled for delivery in April, May, and June.

Acetylene by Wulffa 24-page study

Technical and economic study of the Wulff Process for production of acetylene from light hydrocarbons is contained in 24page report. Process is described, with the aid of a simplified flow diagram, and data on plant and manufacturing costs are provided. Sufficient information is available to permit the adjustment of raw material, utility and labor costs and accounting procedures to specific cases.

Report can be obtained from Room 359, The Lummus Company, Dept. CP, 385 Madison Ave., New York 17, N. Y. When inquiring check CP 1094 on handy form, pages 2 and 3.

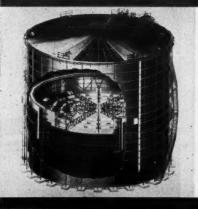
For more information on product at right, specify CP 1095 see information request blank between pages 2-3.

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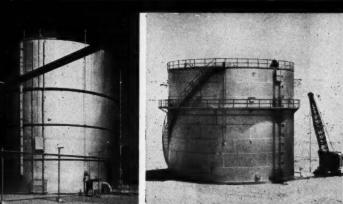
simple! proved in use!

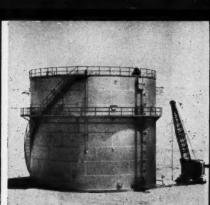
Wiggins Fasholder

GENERAL AMERICAN









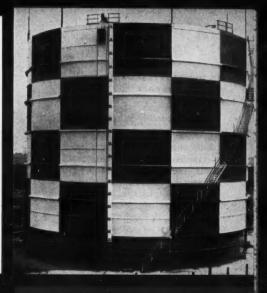




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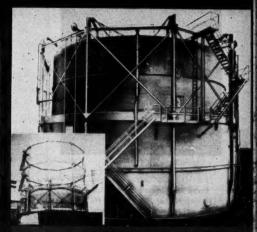


The only gasholder that uses

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The only gasholder that assures you

> NO WEATHER WORRIES NO OPERATING COSTS NO MAINTENANCE PROBLEMS



You can convert your old style gasholders to get the Wiggins advantages

Be sure to get the performance record on the only modern gasholder before you plan any gasholder construction.

No major investment when conveyors are leased . . .

fixed monthly sum covers use of equipment

Gravity and belt conveyors, as well as complete systems ranging from simple interfloor belt conveyors to complete materials flow installations engineered to handle plant wide operations are now available on a leased plan. A fixed monthly sum covers the use of equipment with insurance, maintenance, repair, and personal property tax paid by the conveyor manufacturer.

Each lessor is contracted with separately by the conveyor manufacturer for installation of equipment. Premises are thoroughly surveyed and detailed consultation held with customer to determine requirements. Quotation can then be given and after lessee has readied premises, installation can be completed. Installation costs are paid separately. Thereafter, only one sum is paid and that is the monthly rental charge.

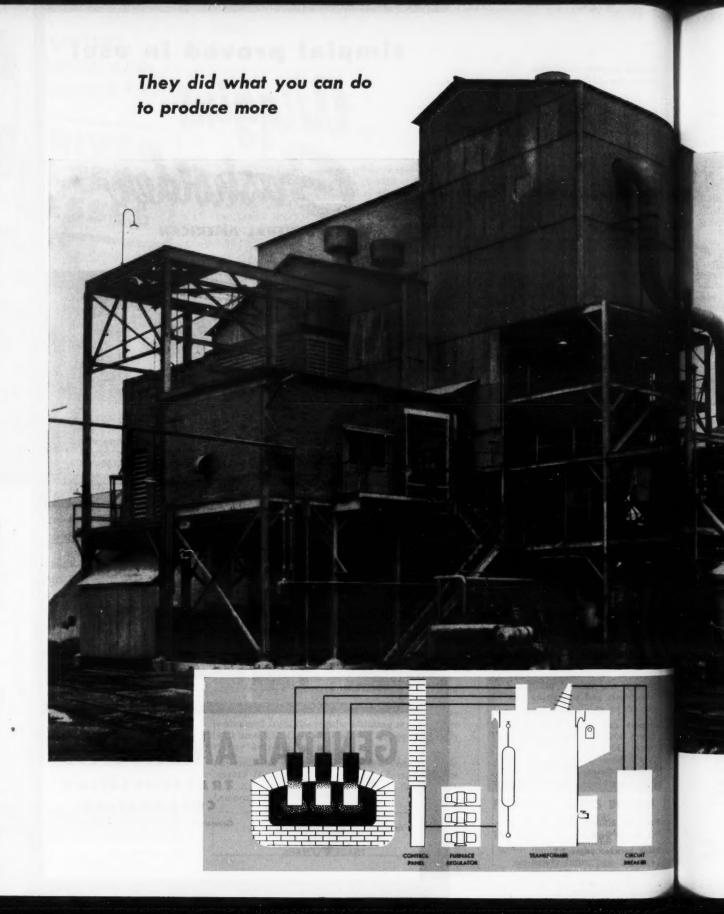
Leases are set up on a ten year period. Rental is reduced substantially after each three year period the equipment is in use.



Typical combination gravity and belt conveyor installation now offered on lease basis, including maintenance by factory-trained crews provided by lessor

However, actual obligation is for one year only. To terminate lease at end of first year or any subsequent leased year, notice must be given six months before the end of lease year.

Additions can be made to any of these leased installations as required. While such new equipment can be covered by a second lease, it is generally more practical to end the original lease and enter into a new agreement covering the



How the right Arc Furnace Equipment keeps costs down

Here's a case where a relatively small plant is one of the industry's lowest cost producers. It's the Virginia-Carolina Chemical Corporation's new electric furnace operation at Charleston, S. C., for the production of phosphorus.

Power efficiency is 10% above normal

The biggest operating cost item is electric power (30 to 35% of total operating costs) so they planned the electrical system carefully and had Westinghouse help. First they designed for an unusually high operating voltage. This increased the efficiency 10% and also boosted furnace capacity. In effect, the high voltage lengthens the reaction zone in the furnace and thus increases production per kwhr.

Rototrol runs furnace automatically

The furnace operation is controlled automatically by Westinghouse Rototrol*. It maintains the desired operating conditions by continuously moving the carbon electrodes up and down within the boiling charge. When any electrical disturbance occurs, Rototrol smoothly restores proper conditions without overshooting.

System designed for high power factor

Smart planning also resulted in a high power factor for the unit and this further reduced power bills. The whole electrical system is highly dependable because of the experience Westinghouse brings to furnace equipment design. More Westinghouse arc furnace equipment is in use than all other makes combined.

Call Westinghouse on your next project

This project is typical of the engineering assistance and equipment Westinghouse applies to chemical processes. When your next project comes up, call Westinghouse *early* in the planning stage.

FREE BOOK ON ARC FURNACE EQUIPMENT

If you're interested in arc furnace production, write now for this free book "Westinghouse Equipment for Electric Arc Furnaces", B-4695. It tells how you can increase output, get more dependable production. Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania.

J-94886



Westinghouse

EQUIPMENT FOR CHEMICAL PROCESSES



extended system. Such an arrangement takes into account the rate at which the first equipment is leased, including reductions for the three year periods.

In much the same manner, size of installations may be reduced should change in operations make less equipment necessary.

The lease plan enables firms to install and use labor and time-saving equipment without making a major capital investment. It makes possible exact fixing of handling costs and relieves the contracting firm of bookkeeping involved in figuring depreciation, insurance, and repair. It guards against obsolescence of equipment and permits radical changes to be made easily and economically when conditions demand them.

(Conveyor Leasing Plan is currently offered in Chicago, Philadelphia, New York, Buffalo, and Grand Rapids, Mich. areas by the Rapids-Standard Co., Inc., Dept. CP, 507 Plymouth Road, N.E., Grand Rapids 2, Mich. . . or for more information reader may simply check CP 1096 on convenient Reader Service slip between pages two and three.)

Hints on making up technical books

Two pages of four-page bulletin contains a critique on the subject of scientific or technical books — from the standpoint of physical make-up and presentation. Lead article in the bulletin discusses revision of drug labels so that they conform to the new sections 502 (f) of the Federal Food, Drug and Cosmetic Act. Another article indicates what new legislation concerned with cosmetics will probably encompass.

"Monthly Bulletin, No. 22" is issued by Di Cyan & Brown, Department CP, 12 East 41st Street, New York 17, New York. When inquiring specify CP 1097 on convenient Reader Service slip between pages two and three.

For more information on product at left, specify CP 1098
. . . see information request blank between pages 2-3.

CORROSIVE VAPORS HANDLED BY WORTHINGTON STEAM JET EJECTORS

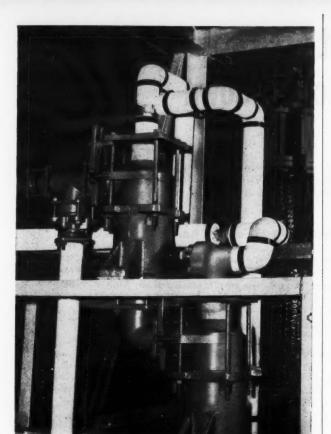
Units used in vacuum process for manufacture of vitamins

In making synthetic vitamins at the Rahway, N. J., plant of Merck & Co., Inc., large quantities of corrosive vapors must be handled.

Worthington impervious graphite steam jet ejectors have been doing the job for years. And wherever corrosive vapors must be handled in vacuum operation—there you will find Worthington steam jet ejectors in heavy-duty operation.

There's a Worthington ejector for every vacuum requirement—from atmosphere to 50 microns absolute, single and multiple stages, condensing and non-condensing, of stainless, bronze, porcelain, impervious graphite, Worthite, cast iron and steel.

Take advantage of Worthington's years of experience in vacuum systems. Write and tell us about your specific requirements. Worthington Corporation, Steam Power Division, Ejector Section, Harrison, New Jersey.



WORTHINGTON TWO-STAGE IMPERVIOUS GRAPHITE STEAM
JET EJECTOR used in synthetic vitamin manufacture at the
Merck plant in Rahway, N. J. This unit is one of thirty-eight
Worthington ejectors used at the plant.

6 BIG ADVANTAGES OF STEAM JET EJECTORS FOR VACUUM SERVICE

- 1. LOW INITIAL COST.
- 2. MINIMUM OPERATING COSTS.
- 3. NEGLIGIBLE MAINTENANCE COSTS.
- 4. NO MOVING PARTS.
- 5. EASY TO OPERATE.
- 6. AVAILABLE IN ANY MACHINABLE MATERIAL.

WORTHINGTON

Steam Jet Ejectors

When inquiring check CP 1099 on handy form, pgs. 2-3

IDEAS

Pneumatic plastic injection press develops pressures up to 70,000 psi . . .

temperature of upper section of injection cylinder is controlled independently

A pneumatic plastic injection press which develops injection pressures up to 70,000 psi has been developed and placed into use by Argonne National Laboratory. The press, which was developed by the Laboratory's Instrument Research and Development Division, is a strict departure from conventional presses which are hydraulically operated. It contains two features unique to plastic injection presses.

First is the flexibility which has been achieved in the control of the operating pressure of the press. The press is driven by an air cylinder and is controlled entirely by electric valves so arranged that the speed of injection is controlled by an adjustable throttle valve. When the air pressure in the air cylinder reaches a pre-set value, an automatic short circuit of the throttle valve takes place and the air pressure in the cylinder suddenly increases to the desired value. Thus, when the injection cylinder is nearing the end of its stroke, a sudden increase of pressure is applied. A pressure of one psi on the air cylinder exerts a pressure of 500 psi on the piston of the injection cylinder.

The other feature which is unique is the temperature control system. In molding critical parts, e. g., optical components and electrical insulators, rigid control of the temperature of the plastic is



Inspecting a plastic optical piece which has been produced by Argonne National Laboratory's newly-developed pneumatic plastic injection press. Rigid control of the temperature of the plastic and flexibility in the control of operating pressure are principal features of press

required. This is accomplished by having the temperature of the upper section of the injection

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cylinder controlled independently from the lower section which consists principally of the plastic spreader and nozzle.

The lower section of the injection cylinder is constructed of extremely thin stainless steel (0.10" thick at thinnest point). Shrunk on to this thinwall section are heavy copper collars which provide the additional support needed to withstand the high pressure. Fastened to the copper collars are electrical heating bands which supply the heat to melt the plastic. The heat is conducted through the copper collars and thinwall to the plastic. Thus, in operation, the plastic enters the top of the injection chamber and is converted to a liquid state while in the upper section of the chamber. As it moves downward toward the mold, it is heated to higher temperatures and when it enters the mold, it is at the desired injection temp.

Inasmuch as copper is a good heat conductor, there is less temperature lag (over-heating and underheating) than in injection presses of the conventional design. This rigid control of the temperature is extremely important in molding optical components and electrical insulators, as overheating would produce carbonization while underheating would result in serious stress conditions in the material.

In comparison to conventional plastic injection presses, the new Argonne press is inexpensive. Its components cost less than \$1000 and can be assembled and tested in about 250 hours.

(Courtesy of Argonne National Laboratory (Operated by the U. of Chicago for the U. S. Atomic Energy Commission), P. O. Box 299, Lemont, Ill.)

Process provides protective surface film for aluminum and alloys . . .

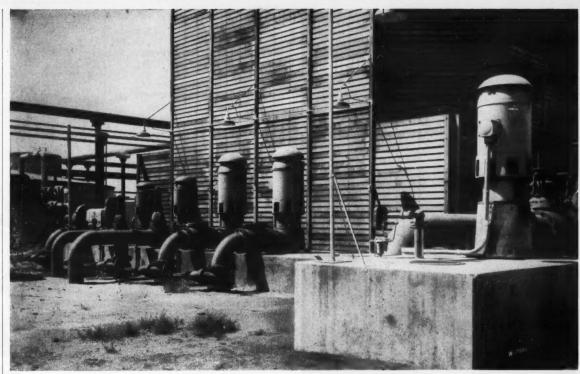
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can be controlled to meet required specifications. Anodizing process will give superior corrosion and abrasion resistant film to surface of aluminum and its alloys, according to manufacturer. Known as EC Electrodizing, process can be controlled to meet required specifications. It is said to provide a protective surface at a fraction of the cost of conventional sulfuric acid and chromic acid processes.

EC Electrodizing process combines advantages of the sulfuric and chromic acid processes and also compensates for their disadvantages. In the EC process, using properly balanced electrolytes, a relatively porous film is generated first. Through this film, a relatively non-porous film is induced directly on to the surface of metal being treated.

In addition to power savings claimed, economic advantages are said to accrue from: decreased cost of electrolyte; completion of four to five times as much work with same equipment; reduction of down time and dumping practically to zero; about 50% reduction in cooling cost; and negligible cost of heat sealing.

(Information courtesy of Philton Company, Dept. CP, 200 W. Ninth St., Wilmington, Del.)



WORTHINGTON VERTICAL TURBINE PUMP installation at The Derby Oil Company refinery in Wichita, Kansas. The pump on the extreme left is driven by a Worthington steam turbine.

Vertical turbine pumps— the logical choice for cooling tower service

During installation of a new cat cracker, The Derby Oil Company revised their entire cooling system at their Wichita, Kansas, refinery and purchased a new three section cooling tower. As part of this system, eight Worthington vertical turbine pumps were installed. Here are some of the inherent characteristics of vertical turbine pumps that make these units the logical choice for this application:

1. Drive unit is remote and separate from the pumping element.

2. No need for priming or expensive dry pits because pump always operates submerged.

3. No suction problems.

Worthington gives you the newest, best-engineered vertical turbine pump available today. Find out more about these modern Worthington units. Contact your nearest Worthington district office, or write to Worthington Corporation, Vertical Turbine Pump Division, at Succasunna, New Jersey, or Denver, Colorado.

D.2.8











The World's Broadest Line Assures You The Right Pump For Every Job

CONSERVE GROUND WATER-IT IS A VALUABLE RESOURCE AND IS NOT UNLIMITED

When inquiring check CP 1100 on handy form, pgs. 2-3

Series I—Heavy duty bronze rotary gear pumps
Oilless bearings 2-23 G.P.M.—0-100 P.S.I. \$14.25-\$29.75 (six pumps)

Series II – Close coupled motor driven bronze pumps Oilless bearings 2-4 G.P.M. – 0-100 P.S.I. \$20.00-\$22.50 (two pumps)

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Oilless bearings 50-150 G.P.M. — 0-150 P.S.I. \$77.50-\$200.00 (five pumps)

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Series 55—Standard bronze rotary gear pumps Grease fittings 2-23 G.P.M.—0-100 P.S.I. \$11.25-\$29.00 (twelve pumps)

Series G-Standard bronze centrifugal pumps
Grease fittings 2-25 G.P.M.-2-10 P.S.I. \$9.25-\$24.00 (three pumps)

See our catalog in Sweet's PRODUCT DESIGN File

OBERDORFER BRONZE PUMPS

635 Thom	pson Rd., Syracuse	rfer Foundries, Inc , N. Y.	
		ne Oberdorfer Indu	strial
Pump catalo	og to:		
NAME			***************************************
COMPANY	**************************************	****************	
ADDRESS	*******************************	***************************************	
ADDRESS	**************************************	******************************	

When inquiring check CP 1101 on handy form, pgs. 2-3

IDEAS

Reveal means to relieve stresses in nylon moldings . . .

> synthetic wax functions as heat transfer medium

Molded nylon parts are finding increased application as engineering materials in the form of gears, cams, and other component mechanical parts for the automotive and electrical industry.

Stresses are set up in the molded parts during the molding process and by shrinkage after molding. These stresses may relieve themselves in time, but the length of time required is not predictable.

Dimensional change in the molded item usually accompanies relief of such stresses. To protect the molded part against such dimensional change the molded items should be relieved of residual stresses by heat treating or normalizing soon after molding.

The recommended method for heat treating nylon molded parts is by immersion in a suitable heat transfer medium maintained at a temperature of about 350°F. This will minimize or eliminate dimensional change which normally takes place under uncontrolled stress relief.

Glycowax S-932, a synthetic wax, has been selected for use as a heat transfer medium for this purpose. The wax melts at 140-147°F and is stable over the heat range required. Smoke point is about 500°F and flash point about 620°F; it does not attack nylon and is available in convenient flake form.

Heat treating bath is, preferably, electrically heated and thermostatically controlled at the desired temperature of 350°F. For handling a large quantity of small items, a wire basket fitted with a lid to prevent the nylon from floating is suggested. The wire basket is then immersed in the heat treating bath. Minimum immersion time for heat treating articles having a wall thickness of less than $\frac{1}{8}$ " is 10 min. For articles of heavier cross section, up to 30 min may be required. If desired, a standard immersion time of 30 min for all articles may be used.

After immersion, the basket is removed and allowed to drain. The Glycowax S-932 gives good run-off and only a very thin



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ANSUL CHEMICAL COMPANY . MARINETTE, WISCONSIN

See Page 152
When inquiring check CP 1102 on handy form, pgs. 2-3



When inquiring check CP 1103 on handy form, pgs. 2-3

SCREW PRODUCTS COMPANY, INC.

33 GREENE STREET NEW YORK 13, N. Y.

film remains on the nylon parts. Treated parts are placed in an insulated box and allowed to cool.

Removal of the thin film of wax is usually unnecessary. If removal is necessary, parts can be replaced in the wire basket and immersed in boiling water for about 1 min.

(Glycowax S-932 is a product of Glyco Products Company, Incorporated, Department CP, Brooklyn 2, New York.)

NYU engineers start solving air pollution problems before they arise . . .

ISIN

'actually, open air is one of the most valuable means of waste disposal at our command"

Smoke tunnel tests on models of proposed industrial plants and the homes, factories, fields, and woods around them are enabling New York University engineers to solve future air pollution problems before they arise. A point in case is the Hudson Station of Rockland Light & Power Co., Tomkins Cove, N. Y., where expansion plans call for installation of a 66,000 kw generating unit in addition to two 22,000 kw units already in operation. Terrainmodel tests at the university and sponsored by Burns & Roe, Inc., consulting engineers to the company, indicated that the expansion could be accomplished without increasing air pollution. In fact, the investigation revealed certain modifications to existing stacks that would appreciably improve the existing conditions.

The smoke tunnel is specifically designed to handle atmospheric contamination problems, such as those arising from the nuclear power development program of the AEC. About two years ago, that organization provided for extensive additions to the tunnel in order to simulate conditions of air turbulence and even special conditions such as the air temperature inversions encountered in the recurrent Los Angeles smog. However, smoke tunnel research at the university is part of a large program of investigation into all phases of air and water pollution.

According to Dr. Harold K. Work, director of Research Div. of NYU's College of Engineering, most existing air-pollution control techniques are based on preventing polluting substances from reaching the air. Although useful in extreme cases where a health hazard or reclaiming valuable chemicals are involved, these techniques are usually expensive and generally leave a waste-disposal problem of another kind to be handled.

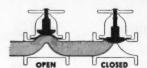
In the opinion of Dr. Work, "We must learn how to dispose of these wastes in a manner that is harmless to the public and yet does not entail needless expense for industry that may inhibit our industrial growth. Actually the open air, because of its diluting and purifying action, is one of the most valuable means of waste-disposal at our command. The smoke-tunnel research is helping us to learn how to work in harmony with nature in disposing of wastes."

(Information reported through courtesy of New York University, Dept. CP, Washington Square Center, New York, N. Y.)



The valve originally designed to eliminate

COMPRESSED AIR LEAKS



Features which have made Grinnell-Saunders Diaphragm Valves the specified valve in many different industries:

Streamlined flow. Smooth, streamlined passage, without pockets, prevents trapping of solids. Frictional resistance is at a minimum — regardless of direction of fluid flow. No disc holder in fluid stream.

Leak-tight closure against grit, scale, suspended solids. The resilient diaphragm, plus the large area of contact, gives leak-tight closure against pressure or vacuum.

Working parts absolutely isolated from fluid. Diaphragm completely seals off working parts from fluid in the line. No sticking, clogging or corroding of working parts. Valve lubricant cannot contaminate fluids.

Body, lining and diaphragm materials to meet service condition. Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum; other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics.

Minimum maintenance. No refacing or reseating is required. No packing glands to demand attention.

New diaphragm can be inserted without removing valve body from the line.

Quick Operating Valv

Write for Grinnell-Saunders Diaphragm Valve Catalog. A single 1/32-inch leak in an air valve can waste. in one month, the full cost of a Grinnell-Saunders Diaphragm Valve. In fact, that's why Grinnell-Saunders Diaphragm Valves were designed . . . to eliminate costly air leaks. Even when scale in the line becomes lodged on the valve weir, Grinnell-Saunders Valves give positive, air-tight closure.

The operating principle is simple. A rubber diaphragm, seating on metal, makes possible an absolute seal. At the same time, because working parts are wholly isolated, no packing glands are necessary, and stem leaks are impossible.

Successful on compressed air lines, it was only a matter of time before Grinnell-Saunders Diaphragm Valves were in demand for other type installations . . . handling materials as diversified as corrosive fluids, gases, beverages, foods, suspended solids ... in lines where corrosion, abrasion, contamination, clogging, leakage and maintenance are costly factors.

Grinnell-Saunders Diaphragm Valves can be had with body, lining and diaphragm materials to meet different service conditions. Assign your next valve problem to Grinnell.



Grinnell Company, Inc., Providence, Rhode Island

Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies Amco air conditioning systems Grinnell automatic sprinkler fire protection systems

When inquiring check CP 1104 on handy form, pgs. 2-3

DUST

FILTERS

GET ALL OF

THE DUST

FROM THESE

OPERATIONS

for all process operations

CRUSHING

MILLING

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SCREENING

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FEEDING

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MANUFACTURING CO.

4754 TRAIN AVENUE . CLEVELAND 2, OHIO New York • Chicago • Philadelphia • Syracuse • Detroit • Buffalo Cincinnati • Sr. Louis • Minneapolis • Birmingham • Los Angeles • Toronto

When inquiring check CP 1105 on handy form, pgs. 2-3

IDEAS

Courses of instruction offered on plastic materials of construction . . .

> book reference in the course will be supplemented by practical applications

All interested corrosion engineers and maintenance men, regardless of company affiliation, may enroll in courses of instruction on plastic materials of construction established by Atlas Mineral Products Company. Subject matter will be based primarily on a reference book authored by Drs. Raymond B. Seymour, Robert H. Steiner, and George Gabriel. This will be supplemented by practical applications. A full week's course and a three day course have been established for corrosion engineers and maintenance personnel respectively.

No tuition will be charged, but each applicant will be expected to defray his own transportation and living costs during the training period. Attendance will be limited to male industrial engineers and maintenance personnel who require a knowledge of corrosion resistant coatings, linings, jointing materials, fabricated plastics, and caulking materials in their work.

Following subjects will be covered: basic fundamentals of plant design; properties of plastic and ceramic materials used for chemical resistant equipment: protective coatings; rubber and plastic linings; chemical resistant cements; plastic pipe; all plastic structures; pipe jointing materials; floor and tank construction; chemical process equipment; waste disposal lines and sewer construction; corrosion resistance of specific materials; economic consideration in corrosion resistant construction; testing methods; and application of corrosion resistant plastic materials.

Those desiring to attend these courses during the summer of 1953 should make application at least three weeks prior to the period in which they would like to attend. It is suggested that applicants list three different weeks stating the order of preference.

(Those interested in attending these courses should write to Joseph A. Snook, Vice President, Atlas Mineral Products Co., 26 Walnut St., Mertztown, Pa.)

SRRL "filtration-extraction" gets added licensee

Another company has been added to those licensed to use the Southern Regional Research Laboratory's "filtration-extraction" process for cottonseed. The Vern E. Alden Company is the latest name on the list, and the company hints that it will attempt to adapt the process to the extraction of other types of oils besides cottonseed, and to extraction of other components in the chemical and biochemical fields.

The SRRL process uses a horizontal filter as its key component, and the Alden group has had prior experience in using that equipment in extraction processes. Two instances were 1) extraction-recovery of an organic compound, and 2) extraction-recovery of a vitamin concentrate.

(Vern E. Alden Company, Dept. CP, 33 N. LaSalle St., Chicago 2, Ill.)

FUME **STACKS** PLA-TANK®

> Day by day, more and more PLA-TANK Stacks go to work helping to solve corrosion problems.

PLA-TANK STACKS

are manufactured from long-life resin-bonded glass fiber.

PLA-TANK STACKS

are resistant to a wide variety of fumes and temperatures. Not affected by extremes in weather.

PLA-TANK STACKS

are light in weight, relieve danger of collapsing and sagging roofs; need less support. Save on handling, freight and shipping charges.

PLA-TANK STACKS

are easy to install, require less rigging.

PLA-TANK STACKS

are competitively priced with other corrosion-resistant materials.

PLA-TANK STACKS

are available now in diameters to 54".

PLA-TANK STACKS

are the answer to your needs for many fume exhaust jobs now on your drawing boards or for replacements in existing systems.

Write for free data file sheet



When inquiring check CP 1106 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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Flashlight size oscillator rivals NBS frequency standards . . .

transistor oscillator requires new battery every five years

Crystal controlled transistor oscillator is contained in a metal tube less than 2 inches in diameter and is about 7 inches long. At an operating frequency of 100 kc, long-period drift of prototype model was about 3 parts in 10° per day. Bureau of Standards' frequency standard station (WWV in Washington) transmits frequencies accurate to 2 parts in 10° and constant to better than 1 part in 10° per day.

New oscillator dispenses with usual standbys such as lead-acid batteries, voltage regulators, power supplies, temperature controls, and large space requirements. Major components of the oscillator are a type 2517 junction transistor, a high-precision 100 kc GT-cut quartz crystal, and a long-life mercury cell. Dry cell powers the whole unit (1.35 v at 100 micro-amperes) and has an active life, under these conditions, of 5 or more years.

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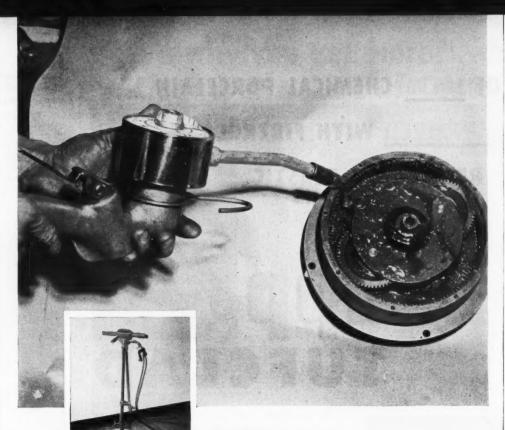
SSING

Over half the space in housing tube is consumed by the crystal. This is mounted in evacuated glass envelope. Transistor, coil, capacitors, and resistors are supported on a Bakelite frame and may be "potted" in casting resin to add rigidity. Mercury cell, about ½ inch deep, is at base of assembly and is insulated from metal can by shield.

Determinations of frequency stability with temperature changes and supply voltage have indicated that frequency varies about 1 part in 10⁸ per °C, and 1 part in 10⁸ per 0.10 v. One very practical advantage of new oscillator is the fact that it may be operated at 0°C (rather than at usual higher temps). Reasonable temperature stability was achieved by merely placing oscillator in a Dewar flask containing crushed ice. Results showed that reduced temperatures were responsible for reducing drift and increasing Q of crystal unit.

(Information is summarized from technical report 1745 of National Bureau of Standards, U.S.D.C., Washington 25, D. C.)

For more information on product at right, specify CP 1107
. . . see information request blank between pages 2 - 3.



Solves leakage problem . . .

• Multi-clean Products, Inc., St. Paul, Minnesota, manufactures industrial floor polishing and scrubbing machines. The machines are shipped with grease already installed in gear reduction units. The problem faced by this company was one of finding a grease that would stand up under hard service and not leak from the gear units. Greases tried either caused or threatened leakage troubles.

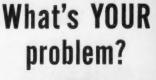
Called in on this problem, a Standard Oil lubrication specialist recommended STANOBAR Grease "S", a highly stable grease with a unique adhesive characteristic. Given an accelerated service test, STANOBAR did not leak from the gear unit, and its consistency showed no change that would later cause a leakage problem. There was no wear of gears or bearings. Adopted for use in the units, STANOBAR has solved this company's lubrication problem on every count. Officials have been able to eliminate the costly and troublesome practice of having all units returned to the factory, at 12 months

STANOBAR TRADE MARK Grease

intervals, to be repacked with grease.

The same lubricating qualities of STANOBAR that solved this problem for Multi-clean Products, Inc. can serve you in a wide variety of applications. A Standard Oil lubrication specialist will be glad to discuss those applications with you. He's right there in your section of the Midwest. You need only phone your local Standard Oil office. Or write, Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY





C. L. Daub is the Standard Oil lubrication specialist who helped Multi-clean Products, Inc. solve an important lubrication problem through his recommendation of STANOBAR Grease.

Like all Standard Oil lubrication specialists, he has a broad background of practical experience plus thorough training in Standard's own schools. And like all lubrication specialists, his on-the-job assistance is always available to the industries in the immediate area he serves. He is one of a corps of experienced men who make their headquarters wherever industry is located throughout the Midwest. Call for the services of your Standard Oil lubrication specialist today. When he stops at your plant, be sure to get information on these outstanding products:

STANOIL Industrial Oils—This multi-purpose line of oils provides cleaner operation of hydraulic units, supplies effective lubrication in compressors, gear cases, and circulating systems. One of two grades can replace a wide variety of special oils and lubricants.

CALUMET Viscous Lubricants—

On open gears and wire rope, these greases resist washing and throw-off. Their superior wetting ability affords better coating of gears and better internal lubrication of wire rope.

STANORUST Rust Preventives

The eight grades of STANORUST form one of the most complete and effective lines of rust preventives on the market today. Each has been scientifically and specially developed for its intended use. The grades range from a fingerprint remover to a heavy semi-solid that protects against corrosion for years under the most severe outdoor exposure.

STANDARD

(Indiana)

ANGLE VALVES

SAFETY VALVES

PLUG COCKS

PIPE and FITTINGS

OF SOLID CHEMICAL PORCELAIN

ARMORED WITH FIBERGLASS-

REINFORCED PLASTIC



Tabbe TUFCLAD

PROCESS EQUIPMENT

CHEMICAL PORCELAIN VALVES . PIPE . RASCHIG RINGS PULSAFEEDER CHEMICAL PROPORTIONING PUMPS

For problems involving severe corrosion or freedom from metallic contamination, the chemical processing industry has found no more effective-or economical-material than Lapp Chemical Porcelain. Now this same solid porcelain material is available with TUFCLAD, a new tough armor which greatly adds to operating security-protection of personnel and equipment -certainty of avoiding product loss.

TUFCLAD is woven Fiberglass fabric, impregnated and bonded in multiple layers to the porcelain body with an Epoxide resin of high strength and chemical and heat resistance. Armor is tightly knit to porcelain and runs end-to-end, under flanges.

In operation, TUFCLAD provides a cushion to protect porcelain against accidental damage in handling or operation-and an insulator against thermal shock. But most important, the TUFCLAD shell is of itself homogeneous and tough - fully able to hold operating pressures against gross leakage even though porcelain is damaged by accident, explosion or fire.

Write for description and specifications of Lapp TUFCLAD-armored Porcelain valves, plug cocks, safety valves, flush valves, pipe, fittings and special shapes. Lapp Insulator Co., Inc., Process Equipment Division, 726 Maple Street, Le Roy, N. Y.

Seattle formaldehyde plant uses high-yield, less expensive vapor-phase oxidation . . .

> Reichhold unit making 24 million pounds per year of 37% solution, is ready to double capacity

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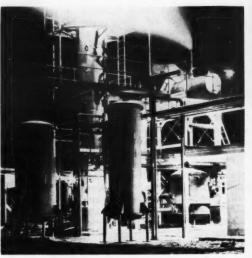
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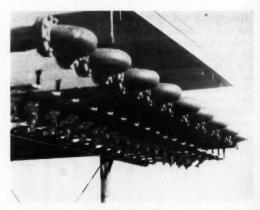
Late last year, Reichhold Chemicals started producing formaldehyde at Seattle, Wash., in the heart of the plywood-producing Northwest. The plant, using an improvement on a European vapor-phase oxidation process, is operating now at 24 million pounds of



View of Seattle formaldehyde plant shows residual gases being vented from absorption system. Tall central column is absorption tower; flanking it in foreground are two preheaters

formaldehyde per year (37% solution), and may soon double that. RCI is using about two-thirds of the current output; the rest is for outside sale as one of the growing list of basic industrial chemicals the company has been producing in increasing amounts since World War II.

In the Seattle vapor-phase oxidation process, methanol and compressed air are mixed in vaporizers at



Alcohol is vaporized in this piping network, and is then mixed with air to provide the vapor feed to reaction unit at Reichhold Chemicals' plant

62

high temperatures, in the presence of a metallic oxide catalyst. Process offers three big advantages over the silver process:

- 1) It's simpler, and production costs are lower. Alcohol need not be rectified. Stainless steel needs are reduced.
- 2) Yield is reported to be above 95%, instead of 85 to 88% for the silver process.
- 3) Plant construction costs are cut two-thirds by the elimination of stripping columns and use of only one 5' diameter converter instead of the battery of converters which may be used in the silver process.

According to the current blueprint, RCI formaldehyde units at Seattle, Ballardvale, Mass. (Watson-Park Co. plant), Detroit, Tuscaloosa, Charlotte, and possibly Port Moody, B.C., will be producing at the combined rate of 85 million pounds a year by 1954. (Information courtesy of Reichhold Chemicals, Inc., Dept. CP, Rockefeller Center, New York 20, N..Y.)

Employ vapor compression still to concentrate radioactive liquid wastes . . .

at boil-up rate of 91 gph, unit efficiency is 12.2 lb distillate per 1000 Btu input energy

A group at an atomic energy site has been engaged in developing an economical method for concentrating dilute radioactive liquid wastes. Goal is an effluent water with an activity level not to exceed 3 x $10^{-6}~\mu c$ per ml. Laboratory scale experiments demonstrated that the required decontamination factor could be achieved by simple evaporation coupled with a Fiberglas filter for removing radioactive entrainment in the vapor. A vapor compression still was the type evaporator decided upon for experimentation on a semi-works basis.

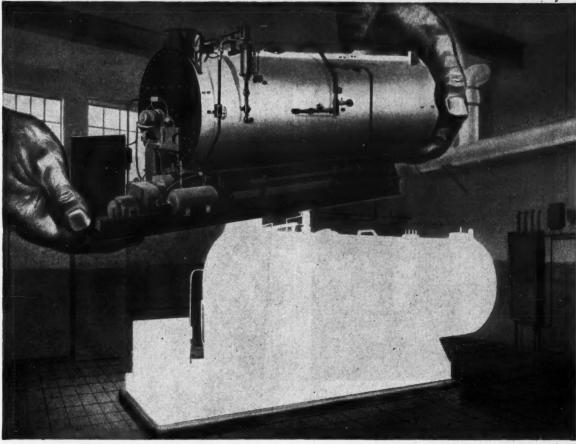
Description

The compression distillation unit*, constructed with all non-ferrous corrosion-resistant materials, is designed to produce 83 gph (nominal) of distilled water of purity equal to 5 ppm of NaCl or better from sea water and with a fuel economy of 150 lb of product-pound fuel. Feed is pumped through a heat exchanger, heated by returning distillate and blowdown, and introduced into the hot well of the evaporator. Hot well contents are evaporated inside a vertical tube bundle by heat transferred by vapor condensing on the shell side of the tube bundle (and by auxiliary heat in the form of steam injected into the hot well by a steam sparger). The vapor rises around a baffle, and is led to a motor-driven vapor compressor and finally carried to the shell side of the hot well.

In the vapor compressor, vapor is compressed from 3 to 6 psig, sufficient to raise the condensing temperature about 10°F, so that its latent heat may be utilized in the shell side of the evaporator for evaporating the hot well contents.

(Continued on next page)

Here's why you get more...when you buy a Cleaver-Brooks Self-Contained Boiler



...only Cleaver-Brooks can offer you the experience gained from more than 20 years of pioneering . . . and more than 12,000 individual "packaged" boiler installations

CLEAVER-BROOKS pioneering has been largely responsible for simplifying boiler buying . . . lowering costs of installation . . . delivering 80% guaranteed steam efficiency from every fuel dollar.

Boilers can be shipped as completely assembled and tested self-contained units, with auxiliaries as required. Installation involves minimum of time, construction and space. Usually connections only to steam, fuel, water lines and electrical service are needed. No special foundations are required. A short vent takes care of exhaust gases. Frequently, boilers are ready for use in a matter of hours, depending

on availability of service lines.

Cleaver-Brooks, originators of the self-contained boiler, offers wider experience that counts in another important way. Qualified engineers help you plan steam plants tailored exactly for your needs. Carefully analyzed are loads, space and equipment arrangement. This not only helps you solve present steam needs, but adds flexibility for future expansion as well.

This application engineering, plus basically sound design and construction is your assurance of a full return from your boiler investment. When you specify a self-contained boiler — make sure it's a Cleaver-Brooks.

Send for Catalog AD-100 for full details on Cleaver-Brooks boilers. Available for oil, gas and combination oil/gas firing. Sizes 15 to 500 hp, 15 to 250 psi — for heating and processing.



CLEAVER-BROOKS COMPANY

Dept. F, 349 E. Keefe Ave. Milwaukee 12, Wisconsin, U.S.A.

Cleaver-Brooks

THE SELF-CONTAINED BOILER

Steam Boilers • Oil and Bitumin Tank Car Heaters • Distillation Equipment Oil and Gas Fired Conversion Burners

When inquiring check CP 1109 on handy form, pgs. 2-3

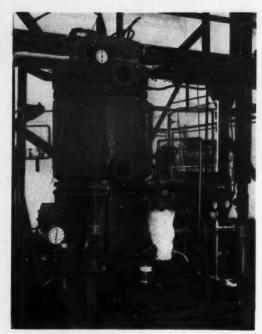
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(Continued from preceding page)

Results

Unit Efficiency and Process Costs
Unit efficiency for a boil-up rate of 91 gph is 12.2
lb of distillate per 1000 Btu input energy. This is



Close view of 83 gph evaporator being used at atomic energy site for radioactive waste concentration

in contrast with unit efficiencies of about 1 lb of distillate per 1000 Btu input energy for conventional single-stage evaporators.

Heat Balance

		of Distillate	
Heat In (Btu/Hr)	Heat Out (Btu/Hr)	
Energy to compressor	25	Net out in distillate	17
Auxiliary steam	57	Venting	12
	-	Losses	53
Tatal	0.0	*	_
Total	82	Total	82
Unit Efficiency — 12.2	lb Dis	tillate	
1000	Btu In	put Energy	

Product Purity

In a series of 18 runs, the average distillate activity was 0.25 x $10^{-6}~\mu c/ml$, with a minimum value of 0.01 x 10^{-6} and a maximum value of 0.81 $\mu c/ml$. Thus the distillate purity was demonstrated to be more than 10 times greater than that required.

Scalin

Although waste being treated was a heterogeneous type feed with widely varying amounts and kinds of dissolved and suspended solids, it was known that carbonates and sulfates were not likely to be present. A cheesecloth-lined basket-type strainer was placed over the feed tank and served to remove large solid material from the feed.

The strained feed, which still contained considerable suspended solids and dissolved salts, was preheated

GET LOW-COST PRODUCTION WITH...

NEW "KARBATE" STANDARD HCI ABSORBER



- PRODUCES UP TO 20 TONS
 PER DAY OF 22° BAUMÉ HCI
- PNEUMATIC AUTOMATIC CONTROL
- STANDARD ACCESSORIES: SUPPORT FRAME, MIST ELIMINATOR, NON-SIPHONING SEPARATOR
- COMPACT, LIGHT WEIGHT
- EASY TO ASSEMBLE AND INSTALL
- EXCEPTIONALLY LOW MAINTENANCE
- NO VENT LOSSES
- LOW PRESSURE DROP
- SHIPPED FROM STOCK
- MINIMUM INSTALLED COST

Write For New Catalog Section S-7460

...ALL "KARBATE" IMPERVIOUS GRAPHITE EQUIPMENT GIVES YOU:

OUTSTANDING CORROSION RESISTANCE

COMPLETE IMMUNITY TO THERMAL SHOCK

FREEDOM FROM METALLIC CONTAMINATION

● LONG LIFE — LOW MAINTENANCE

Speci

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Versatile, ment for ride synt moist gase eration. C S-7530.

MAY, 1

...THE NATIONAL CARBON LINE

Specify "National" Carbon and Graphite and "Karbate" Impervious Graphite **Equipment for Processing and Conveying Corrosive Fluids.**



For industry's toughest fluid-conveying requirements. Easy to install and maintain with simple hand tools. Catalog Section S-7000.

ING

STALL



Standard or custom-built; shell and tube, concentric and immersion types in stock sizes. Catalog Sections S-6620 S-6670, S-6740, S-6750.



The centrifugal pump for handling corrosive fluids. Rugged, trouble-free design. Handling capacities to 800 G.P.M. Catalog Section S-7200.



"National" Graphite Ground Anodes for cathodic protection of buried or submerged metal structures. Catalog Section S-6510.



Accepted material for lining tanks, towers, digesters and other vessels containing corrosive chemicals. Catalog Section S-6210.



New "Karbate" coolers feature standardized, sectional construction...high heat-transfer rate...low initial cost Catalog Section S-6820.



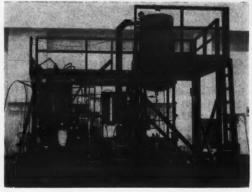
Versatile, standard equipment for hydrogen chloride synthesis. Burns moist gases. Simple in operation. Catalog Section S-7530.

For heating and agitating corrosive solutions by direct injection of steam. Not affected by thermal shock. Catalog Section S-7300.

For absorption, fractionation, scrubbing. Easily erected from standard sections and components. Catalog Section S-7350.



When inquiring check CP 1110 on handy form, pgs. 2-3



Overall shot of vapor compression evaporation unit. At upper right is vapor filter unit for removing radioactive entrainment in the vapor. In middle foreground are instrument panel and below it the vapor compressor and motor. Vapor is compressed from 3 psig to 6 psig in latter unit-sufficient to raise condensing temperature about ten degrees Fahrenheit so that its latent heat may be utilized for evaporating hot well contents

in the feed heat exchanger and evaporated in the stillpot to a concentrate of 50 to 70 per cent weight total solids.

After about sixty hours operation, heat transfer coefficients measured for the heat exchanger indicated that no permanent scaling had taken place and this was confirmed by visual inspection.

The heat transfer coefficient of the evaporator tube bundle decreased with time during concentration, but after blowdown of the concentrate, the heat transfer coefficient always returned essentially to the initial value.

Conclusion

Equipment in general, including the vapor compressor, has required little maintenance and appears to be rugged and dependable. High steam and power efficiencies are realized by the use of vapor compression and these high efficiencies are reflected in low process costs. On the basis of the preceding, a larger unit of 300 gph capacity is now being installed.

*Cleaver-Brooks DVC-8E compression distillation unit (From report BNL-121, Associated Universities, Inc., Brookhaven National Laboratory, Upton, L. I., New York.)

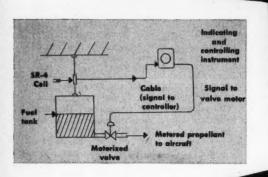
No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with Putman Publishing Co. many years ago . . . to help busy men like you!

THE EDITORS

at left center, the fuel feed tank is suspended from a cable which is attached to the load cell so that the entire gross weight of the tank and fuel is supported by the cell.

SR-4 DEVICES IN INDUSTRY... USES UNLIMITED



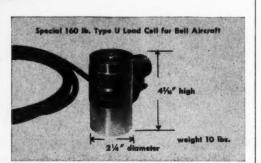
THE PROBLEM

For their rocket engine research and produc-

tion, Bell Aircraft Corporation was designing a new instrumentation system. Their problem

was finding a way to meter the propellant

consumption remotely.



This system benefits Bell in these three ways:

- 1. The fuel consumption can be indicated and controlled remotely because the only connection from the SR-4 cell to the instrument is through electric cable.
- 2. Because of special aluminum construction this cell resists corrosion by common propellants such as hydrogen peroxide and nitric acid provided that cell is washed off after any accidental contact with them.

3. The need for maintenance is virtually eliminated by the rugged construction and by the absence of moving parts.

The uses of SR-4 devices throughout industry are unlimited. For further information about how they might cut your costs and time for measuring loads, pressure or torque, please write Dept. 3106, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.

TESTING HEADQUARTERS

General Offices: Philadelphia 42, Pa. • Offices in Principal Cities



IDEAS

Built soaps made in one step by simple process . . .

fatty acid and soda ash mixture saponifies pronto when sprayed into reaction chamber

A simple process has been developed for producing a filled or built soap direct from fatty acids and soda ash. Yield of the product — dry, granular, and free-flowing — is practically 100%, and no byproducts are produced. The soap is said to dissolve rapidly in water and to give excellent results for most industrial purposes. Total cost of producing the soap - including raw materials, utilities, maintenance, and amortization of investment - is reported to be lower than for other methods of producing an equivalent product.

In operation, 47 to 60% of dry molten fatty acid and 53 to 40% of dry soda ash are mixed together and atomized with steam into a reaction and collecting chamber. With the excess alkali, saponification is almost instantaneous, and a dry granular product falls to the collecting conveyor at the bottom of the chamber, which takes it to storage or packaging.

By a partial presaponification, the fatty acid content of the mixture can be raised to as high as 70 or 75%.

The desired extra ingredients, such as sulfonates, silicates, and phosphates, can be added to the mixture before it is atomized into the reaction chamber.

(Process is licensed by H. L. Barnebey, Dept. CP, PO Box 144, Pittsburgh 30, Pa. . . . or for more information check CP 1112 on handy form, pages 2 and 3.)

Breweries use activated carbon to improve color, taste, and chill-stability of beer . . .

speeds formation of hot break if added to kettle; provides more barrels of clear wort

Full-scale brewery use of activated carbon, supported by laboratory findings, indicates that many advantages are obtained. Color, taste, chill-stability and uniformity of finished beer are improved, without adverse effect on foaming qualities or the constituents responsible for pleasant taste. Processing advantages which may save time are clearly indicated.

Carbon may be used either in kettle brewing or in cellar treatment. Methods of application for the two are somewhat different, but have one thing in common: good mixing is essential for best results.

Kettle Application Benefits

When the wort is carbon-treated, the finished beer has a pleasant taste which is free from harsh hop flavor and off-tastes caused by long sparging. Foam characteristics are excellent and shelf life is two to six times as long as for untreated beer (depending on brewery which is reporting in the test). Laboratory tests show that the carbon treatment has no harmful effect on the protein content, real extract, or real degree of fermentation.

When inquiring check CP 1111 on handy form, pgs. 2-3

The l wort treate knock rapidl to dra per 50 more

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carbon storage by usin Propor tion to Such a

The hot break forms much faster in carbon-treated wort . . . in many cases 30 minutes ahead of the untreated wort. It survives the rough handling in the knocking-out process, remains dense, and settles out rapidly. Because of this, it is not unusual to be able to draw off five to seven more barrels of clear wort per 500 barrels. The additional wort recovery alone more than pays for the cost of the carbon.

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Kettle Addition Techniques

In adding carbon to the kettle, it has been found best to first make up a slurry of the carbon in warm water — one lb per gal. The quantity of slurry should be sufficient to provide six lb of carbon for

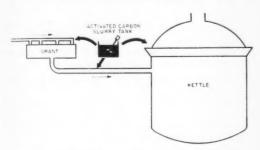


Figure I-Heavy arrows show three ways of adding activated carbon to kettle wort

each 100 barrels of wort to be treated. Best time to add the slurry is just after full boiling, and at least 15 minutes prior to any major hops addition.

Some breweries merely dump the slurry directly into the kettle with pails, or pipe it directly to the kettle. Others add the slurry to the grant or to the line from the grant to the kettle (see Fig 1). The carbon is uniformly suspended in the slurry by mechanical agitation or by recycling through the pump.

Cellar Application Benefits

Finished beer made by cellar treatment gets some of the same benefits as beer given kettle treatment. However, a significant improvement in chill-stability is achieved by cellar treatment. (A chill-stable beer develops little turbidity upon chilling.)

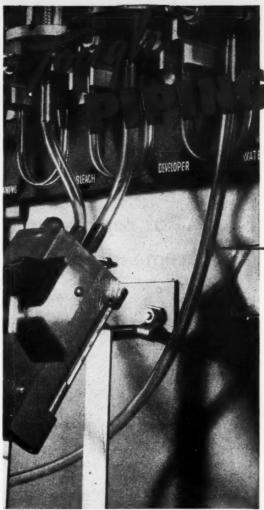
Cellar Application Techniques

Some mixing can be obtained by putting the required amount of carbon into a ruh or storage tank with a small amount of water or beer. The beer to be treated is pumped into the tank, and its turbulence when entering stirs up the slurry at the bottom of

Tank contents may be recirculated to obtain mixing, but this is not too effective. "Rousing" with carbon dioxide may be effective if the brewery is equipped to use this method.

A more successful method involves injecting the carbon slurry into the pipeline carrying beer to a storage tank (Fig 2). This may be accomplished by using a proportioning feeder (such as made by Proportioneers, Inc.) to inject the slurry in proportion to the rate at which the beer is being pumped. Such a proportioning pump will inject slurry against

(Continued on next page)



TYGON TUBING — as used in an automatic picture taking machine. Here the clarity, flexibility, and resistance of TYGON to photographic chemicals has greatly increased service life, simplified operation, and minimized maintenance as compared to that obtained with rubber tubing. TYGON TANK MOLDED TYGON TYGON PAINT TYCON DICTES quickly applied, fast drying protection against corrosive fumes and spillage. long lasting, heavy duty sheet TYGON to withstand virtually all chemicals. accurate, durable parts and fittings of outstanding chemical resistance for all types of equipment.

AKRON 9, OHIO

PROBLEMS EASILY SOLVED WITH TYCON TUBING

Every day, tough piping problems — big and small — are being solved with versatile, plastic TYGON TUBING. Designers and engineers, throughout industry, are finding TYGON the quick, easy, positive answer to tricky transmission jobs involving liquids, gases, or semi-solids. TYGON Tubing not only resists acids, alkalies, oils, greases, certain solvents, and water - but is glass-clear and fully flexible. TYGON also is strong, smooth-surfaced, abrasion-resistant, light in weight, and non-oxidizing. Certain formulations are completely non-toxic.

TYGON's excellent chemical resistance permits its use with virtually any corrosive. Its clarity permits full solution visibility and control. Its flexibility permits the most intricate use without kinking. Its smooth surfaces give maximum flow, easy cleaning, and free draining. Its non-toxicity assures complete safety in food, beverage or medical applications.

TYGON Tubing is made in continuous lengths and a number of stock sizes ranging from 1/8" ID to 2" ID. There are six standard formulations available in clear or glossy black which exhibit a range of physical, electrical, and chemical properties. Braided jacket reinforcement of stainless steel, Saran, or cotton is available and suggested where high constant pressures are encountered.

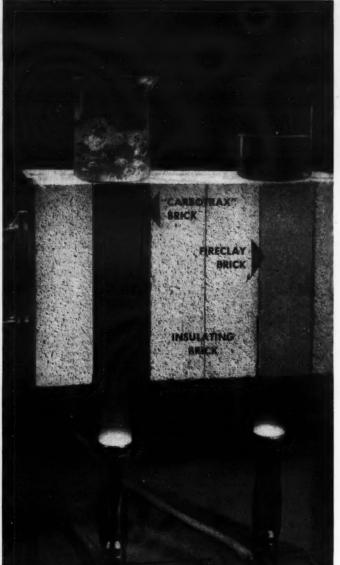
Special compounds and sizes - including rigid tubing - to meet specific requirements can be made where volume warrants.

Write, today, for more information and technical assistance on the use of TYGON Tubing. Ask for Bulletin-77. Ask also about the other forms of versatile TYGON that can help you combat



PLASTICS AND SYNTHETICS-DIVISION

When inquiring check CP 1113 on handy form, pgs. 2-3



Two Meeker burners, two bricks — but see the difference! The beaker on the CARBOFRAX brick boils furiously (through the length of a 9" brick). The water on the fireclay brick is barely tepid.

Dept. S-53, Refracti	ories Division	
The Carborundu	n Company, Perth Amboy, N. J.	
Send complimentar	y copy of Super Refractories booklet	to:
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Refractory that transmits heat

. . . as rapidly as chrome-nickel steels?

Here's a refractory that, in certain respects, is more akin to heat-resisting metals than to refractories. CABOFRAX silicon carbide refractory (same basic material as CARBORUNDUM brand abrasive) is, in many ways, one of the most indestructible of materials. At 2460 F., it has a crushing strength of over 10,000 psi. It is inherently resistant to even the most severe abrasion—often outlasting alloy parts, 5 or 10 to 1. And it can be used at temperatures up to and exceeding 3000 F....roughly 1000 degrees over the upper limits for metals!

But, most important, at elevated temperatures these refractories conduct heat approximately as fast as chrome-nickel steels. This is 11 to 12 times faster than fireclay refractories!

Thus CARBOFRAX refractories are ideal for radiant tubes, muffles, hearths, and other equipment using indirect heating. Since they absorb and release up to five times as many BTU's per second as fireclay, they are also perfect for heat exchange equipment, such as checkers or recuperator tubes. Conversely, these refractories play an important role where heat must be dissipated (e.g. arc shields, pot linings, etc.).

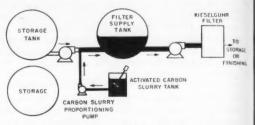
Do any of these applications suggest possibilities? If so, please write or phone us. And be sure to get our easy-to-read 20-page booklet. It describes the many unusual properties of our Super Refractories line. No obligation, of course.

Super Refractories by CARBORUNDUM

Trade Mark

"CARBORUNDUM" AND "CARBOFRAX" ARE REGISTERED TRADEMARKS OF THE CARBORUNDUM CO.—WORLD'S LARGEST MANUFACTURER OF SUPER PERACTORIES

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Figure 2—Here is probably the most successful way of adding activated carbon to cellar beer

a line pressure up to 100 psi, with 10 to 15 psi CO_1 counter-pressure in the receiving tank. Injection lines should not be more than 15" long, and the slurry should be stirred mechanically.

Turbulence in the main beer line assures good mixing. After about thirty minutes (by the time a large tank is full), the carbon will have acted and can then be filtered out in an ordinary powder filter. Any carbon which may get past the powder filter is effectively removed in the pulp filter.

(Summarized from a paper, "The Use of Activated Carbon in Breweries," by W. A. Helbig and C. J. Ballos of the Darco Department, Atlas Powder Company, Dept. CP, New York, N. Y. . . . or for more information on activated carbon check CP 1115 on handy form, pages 2 and 3.)

Photometric reliability checks facilitated by development of standards for UV...

storage tests indicated that solutions were stable under ordinary conditions for 5 years

Designed to permit frequent comparison of spectrophotometers with a set of standards to assure reliability of the instruments, standards for the ultraviolet region consist of an alkaline solution of potasium chromate which may be readily prepared in any laboratory according to a specific procedure. In addition to ease of preparation, these solutions possess an additional advantage in that they are reasonably stable when stored in ordinary storeroom glass bottles for about five years, according to tests conducted by the National Bureau of Standards, investigators of the standards.

As a result of its versatility and the development of commercial, direct-reading photoelectric models, the spectrophotometer has found widespread application in industrial laboratories. Its applications include: 1) color analysis, 2) chemical analysis, 3) determination of structure, 4) detection of impurities, and 5) determination of ionization constants and rates of reaction. Experience has shown that spectrophotometers may need frequent comparison with a set of standards to assure reliability. Although repeated trials may provide data of high reproducibility, gross errors in wavelength may nevertheless make values that are obtained highly unreliable if the instrument has not been recently checked.

When inquiring check CP 1114 on handy form, pgs. 2-3

Since glass standards (useful in the visible range of the spectrum) are unsuitable for standardization in the ultraviolet from the standpoint of both permanence and type of transmittance, other materials were studied. Since distilled water has high transmission in the UV, it appeared that an aqueous solution of some inorganic salt would be most suitable. As a result of studies made by the National Bureau of Standards, spectrophotometric measurements have been completed on an alkaline solution of potassium chromate at 25°C over a wavelength range from 220 to 500 μ . Potassium chromate solutions studied were prepared in two ways: one starting with potassium chromate (K2CrO4), the other with potassium dichromate (K₂Cr₂O₇). Each was prepared so that the final solution contained 0.0400 g of K₂CrO₄ per liter in 0.05N potassium hydroxide. Potassium dichromate possesses the advantage that in stock material it exists in a purer state. Measurements of solutions were made on five types of spectrophotometers by three different methods, and final values for the ultraviolet region were derived from a large number of measurements with three different types of instruments.

Values of spectral transmittancy, T_s , for 1.000 cm thickness of solution were obtained over range studied, and from these data values of absorbency, A_s ($-\log_{10}T_s$), were computed. Changes in spectral transmittancy with changes in temp were small above 235 μ but large from 215 to 235 μ .

Investigation also included a study of effects of storing solutions for periods up to 8 years. Results showed that, although solutions were reasonably stable up to five years, for precision work solutions should be prepared from chemicals of the highest purity possible and that they should be prepared every 6 months. Greatest changes occur below 260 μ .

(Information received from National Bureau of Standards, U. S. Department of Commerce, Washington 25, D.C.)

For more information on product at right, specify CP 1116
... see information request blank between pages 2 - 3.



Consider all that a power failure would cost you in terms of safety...production...security—and money. Add it up and see how much automatic stand-by power you could have for the same price. Ask your nearby Fairbanks-Morse power specialist to show you cases where a dependable Fairbanks-Morse Diesel generating set has paid for itself the first time high line power failed.

Find out today how a Fairbanks-Morse stand-by power package—in the size you need—can bring you automatic protection of power. Do it today—before power fails you.

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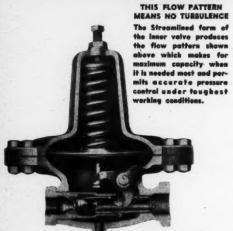
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When you put this Streamlined construction on your lines you have no complicated parts to get out of order, no small ports or passages to clog up. There are no close fits. It's straight line flow all the way — flow that gives you maximum capacity, close delivery pressure control, and tight closures — flow that saves you money all along the line — flow that means elimination of failures - speedier production and no spoilage.

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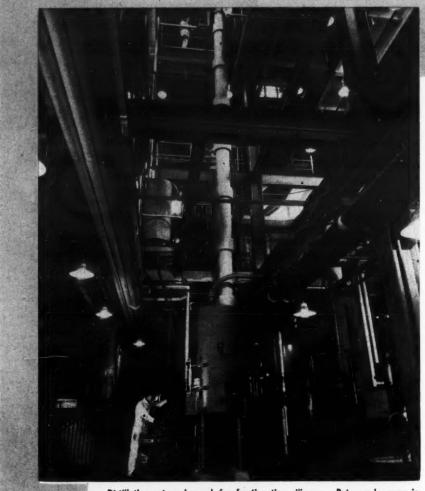
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CONTROLS.

- Maximum capacity when needed most.
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- Cost-saving operation.
- No spoilage.
 Practically zero in maintenance.

A. W. CASH COMPANY DECATUR, ILLINOIS

When inquiring check CP 1117 on handy form, pgs. 2-3



Distillation set-up is used for fractionating silicones. Pot can be seen in lower center, d/p cell is located at top of column

Distillation Rate Set for Peak Efficiency — AND HELD THERE —

Differential pressure across fractionating column controls flow on heat-exchange fluid, thus heat input

E NGINEERS at Dow Corning have put a control system into operation which effectively maintains heat input to a fractionating column at the value known to give maximum efficiency. System is installed in process step for fractional distillation of chlorosilanes. Each still can be operated at any pot temperature ranging from room to 310°C and at pressures from 2 to 760

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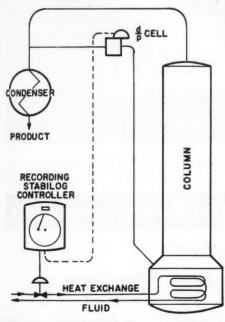
operated. distillation During di of hot flu Stabilflo o recording signal from pressure b vapors in

of d/p cel



Close-up from top of column shows d/p and purging system

Schematic shows how pressure drop across column regulates flow of exchange fluid for constant distillation



mm mercury absolute. Stills operate independently and can be cooled, serviced, and charged without any effect on efficient operation of the other stills.

Heat is supplied by means of heat-exchange fluid fed from central gas-fired heater. Flow of hot fluid to any still is controlled to maintain a constant pressure drop through the still column.

While flow of heat exchange fluid in beating system is automatically controlled, a second cooling system is fed from another central supply, and is manually operated. Cooling system is used only at end of a distillation to minimize time lapse between still loads. During distillation, heat exchange fluid is circulated at a rate to maintain constant flow of distillate. Rate of hot fluid is controlled by stainless steel packless Stabilflo control valve. This valve is tied into a recording Stabilog controller. Controller takes its signal from a d/p cell which measures differential pressure between silicone vapors to condenser and vapors in reboiler of the column. For protection of d/p cell, it is purged with an inert gas.

(Continued on next page)

HELLIGE CliniCol COLORIMETER



Pre-Calibrated for 66 Clinical Tests

The Hellige "CliniCol" is indispensable to the modern hospital, institution, clinical laboratory, and physician for rapid bio-chemical analysis. This photoelectric colorimeter permits determinations to be made in the most advanced, most objective scientific manner . . . completely independent of comparison standards, light conditions and personal judgment. In fact, the simple 3-step operating procedure enables anyone, even without previous training, to make accurate and rapid determinations.

The handbook furnished with the instrument contains all 66 clinical tests in easy to understand language carefully prepared by experts.

(Pre-calibrated instruments with handbooks are also available for 90 tests at \$274.00 and for 43 tests at \$189.00.

COLORIMETER AND TURBIDIMETER

for Chemical Analysis, Process Control, etc.

The Hellige "Chromatron" is designed for accurate and rapid determinations based on the measurement photoelectrically of the color or turbidity of a liquid. The Chromatron can be calibrated easily and quickly for any of the hundreds of standard analytical methods published by such authorities as the A.S.T.M., the A.P.H.A., the A.W.W.A., etc. To use the instrument, a tube containing water is inserted and the meter set to 100. The tube is replaced with another containing the solution being tested and the percent of transmission is noted. Then the results are obtained directly from a calibrated graph.



H-14150. Hellige Chromatron Colorimeter and Turbidimeter. Same general appearance as illustration above. Complete with spare lamp, internal disc with eight filters, three square 13mm light path absorption tubes, six round 10.8mm I.D. absorption tubes, plastic cover and instruction manual. For operation on 115 volts, 60 cycles, a-c. . . \$185.00

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Heavy Duty Straight Form	9"	-100F	+1000F	21/2"	48"	1
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Standard Angle Form	6"	-100F	+1000F	21/2"	72"	1
General Purpose	41/2"	-100F	+1000F	21/2"	36"	1
Laboratory	3.40"	-100F	+500F	2"	24"	1/2 of 1

WESTON Instruments

When inquiring check CP 1119 on handy form, pgs. 2-3

INSTRUMENTATION

(Continued from preceding page)

Any decrease of differential pressure (below set point of controller) increases flow of hot fluid to reboiler. Similarly, rate of flow is limited on high side. Heat input is thus continually maintained to give desired distillation rate. It has been found that once set, differential pressure cell control system effectively maintains desired rate of distillation . . . regardless of still charge. Distillation rates are set, of course, to obtain peak efficiency. (d/p cell, Stabilog Controller, and Stabilflo Stainless Steel Control Valve are products of The Foxboro Company, Dept. CP, Foxboro, Mass. . . . or reader may secure more information by checking CP 1120 on pages two and three.)

What can you do with telemeters?

Information about telemeters used for remote measurement and automatic control of variables is given in booklet. Distances can range from a few feet to many miles. Timely information and engineering data are given on methods. These include use of telephone circuits, private wires, carrier current, microwave, VHF and UHF radio. Multiplexing is also covered.

Large number of typical installations are reviewed — gas companies, water plants, pipeline companies, electric utilities, processing plants are illustrated and described.

M1710 is issued by The Bristol Co., Dept. CP, Waterbury 20, Conn. When inquiring specify CP 1121 on convenient Reader Service slip between pages two and three.

A company name and address . . .

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THE EDITORS





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WHEELER

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Write for information on this thoroughly tested and proved intercom equipment that operates WITHOUT BATTERIES or outside power source...requires no maintenance...is always dependable

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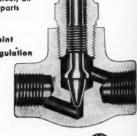
Protect Meters, Instruments

Edward Gage Valves

Moderately priced, these low cost compact valves find many applications for gage, meter and instrument service. Rated conservatively for 4000 lbs at 150F, 600 lbs at 750F, these drop forged steel valves are furnished in sizes from ¼" to 1". Globe and Angle styles in three body materials—carbon steel; all parts 13% chromium steel; or all parts 18-8 stainless steel. Construction features include:

- tight tapered body-bonnet joint
- semi-needle stem for fine regulation
- wide seat joint for tight seating
- bonnet and packing nut plated to reduce galling and corrosion

For complete information write for Catalog 104.



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Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY 1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 1123 on handy form, pgs. 2-3

Bourdon tube and two switches provide simple alarm, control for high, low pressure . . .

both high and low set-point adjustable — composite range runs from 30 inches to 3000 psi

Uses: Single, simple pressure control provides electrical signal at both high and low set-point.

Features: Simple construction — Bourdon tube is connected to two magnet-operated mercury switches — provides control with minimum equipment.

Description: Two magnet-operated mercury switches of the pressure control are independently adjustable. Calibrated dial with separate outside

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Both high and low setting adjustments are located on outside

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adjustment is provided. Adjustments set pressure at which each switch operates. Upper pointer indicates operating point of high pressure alarm circuit, lower pointer indicates low pressure alarm.

Unit can be used to close one alarm circuit at high pressure and another at low pressure with both circuits open over operating range. In control applications it would be used to

open one circuit as pressure rose above set-point, and second circuit as pressure dropped below operating range. Switch action can be reversed to provide two-stage control by opening or closing one circuit on a rise in pressure and second circuit if pressure rise continues.

Controller is available in twelve ranges from 0-30 inches of water to 300-2500 psi. Electrical capacity of each switch is 20 watts with 115/230 v AC or DC.

(Type DA-400 Pressure Control is a product of The Mercoid Corp., Dept. CP, 4201 W. Belmont Ave., Chicago 41, Ill. . . . or for more information check CP 1124 on handy form, pages two and three.)

Dewpoint-H_zO content table given in illustrated publication

Eight-page publication is printed in two colors. Readable text covers several dewpoint instruments in turn, and is supplemented by photographs, charts, and diagrams showing essential points made in text. Back page of bulletin gives a table for dewpoints between 110 and -100°F. Corresponding moisture content is given in various dimensions.

Bul GEC-588A is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 1125 on handy form, pages 2 and 3.



IF YOU have a highly critical process such as manufacturing hermetically sealed instruments or sealing components in evacuated glass tubes you can tolerate no leakage. For detecting incredibly small leaks in such low-volume, low-pressure applications, there is only one instrument sensitive enough to do the job—Consolidated's mass-spectrometer-type Leak Detector. For less critical work, involving the use of hi-vacuum equipment, high-pressure cylinders, containers having welded or soldered joints, or valves moving on an assembly line, this versatile leak detector is the perfect instrument, guarding the effectiveness of

your process and guaranteeing the quality of your product.

eliminates guesswork

this instrument



Consolidated Engineering

CORPORATION

300 North Sierra Madre Villa, Pasadena 15, California

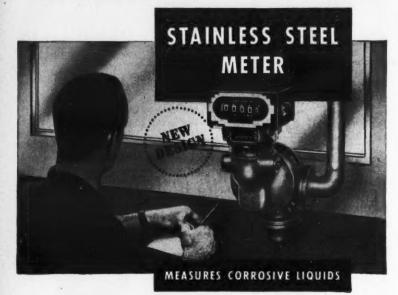
Sales and Service through CEC INSTRUMENTS, INC., a subsidiary with offices in: Pasadena, Philadelphia, New York, Chicago, Dallas analytical instruments for science and industry Leak Detector Consolidated's Model 24-101A detects, locates, and measures leaks in the micron range where it would take 31 years for one cubic centimeter of gas to escape. Request CEC Bulletin 1801-X4.

When inquiring check CP 1126 on handy form, pgs. 2-3

pgs. 2-3

SSING

ALL NEW THROUGH and THROUGH



PROVIDES METERED INDENTIFICATION FOR FORMULA, INVENTORY, AND COST CONTROLS

Got a measurement problem involving corrosive liquids? Want meter control over inventories? Looking for quality and quantity controls when blending or batching? Need accurate meter records for accounting and tax analysis? If your answer is "yes" to any of these questions, then the new Rockwell 2BC Rotocycle meter is for you.

Constructed inside and out of stainless steel this meter resists corrosion, is easy to clean. Has a sturdy, long lived Rotocycle measuring mechanism—famous for its precision accuracy. "Set-stop" quantity control registers and electrically actuated remote registration systems are available with this and many other types and sizes of Rockwell meters. Write for bulletin OG-403.

You Can RELY ON ROCKWELL INDUSTRIAL METERS

ROCKWELL MANUFACTURING COMPANY Pittsburgh 8, Pa.	A5312
Gentlemen: I am interested in measuring	
(Name of Liquid) with your 2BC Stainless Steel Meter.	
Pipe Size	°F max
YOUR NAME	
COMPANY	
STREET	
CITY TONIE STATE	

When inquiring check CP 1127 on handy form, pgs. 2-3

INSTRUMENTATION

Hermetically sealed, meter shows running time on $2^{1/2}$ " face . . .

sealed feature prevents tampering, corrosion from moisture

Uses: Elapsed time indicator shows cumulative running time for electrical equipment.

Features: Hermetically sealed, cannot be tampered with.

Description: Elapsed time indicator was designed for installation where panel space is limited. Meter meets standard 2½" JAN dimensional specifications for panel



Has standard size counter

mounting. Despite this, indicator has standard size counter. Hermetic sealing not only makes instrument tamper proof, it makes it immune to humidity, temperature, or corrosive atmospheres. Motor starts and operates continuously at temperatures ranging from -55 to 85°Centigrade.

Meters are available for registering 1/10 hour steps to 9999.9, or hour steps to 99999. Self-starting synchronous motor may be either 115 or 230 v, 50/60 cycles per second AC. Drawn steel case gives magnetic shielding.

(HM2ET Elapsed Time Indicator is a product of Marion Electrical Instrument Co., Dept. CP, Manchester, N. H. . . . or for more information check CP 1128 on handy Reader Service slip, pages two and three.)

PROCESSING & ENGINEERING

DATA Section

on pages 206, 208, 210, & 212



Here's Why

Wherever temperature readings are required—on the production line, the laboratory or in the field—this sturdy precision instrument can bring you instant, accurate results.

It's Fast . . . in operation and quickly read. Precision movement designed to laboratory standards. Direct reading scale face is easily understood—no slide wires or conversion tables necessary.

It's Accurate . . . consistently to within 34 of one percent under almost all variable conditions. Sturdy, protective case assures continued accuracy in toughest portable service. Ten scale ranges available, from $0-400^\circ$ to $0-3000^\circ$ F. Equivalent Centigrade scales available at no extra cost.

It's Portable . . . compact size, $6\frac{1}{2}$ "x6"x3", and light weight make this pyrometer highly portable and easy to use anywhere. Write today for complete details and prices. Illinois Testing Labratories, Inc., Room 504, 420 N. La Salle Street, Chicago 10, Illinois.

Send for Bulletin on 1500 Pyrometer.

Alnor

PRECISION INSTRUMENTS FOR EVERY INDUSTRY

(F

tic

When inquiring check CP 1129 on handy form, pgs. 2-3



THE DUCON COM	PANY
Department CP	
147 East Second Street,	Minsola, Long Island, New York
NAME	TITLE
COMPANY	
ADDRESS	
CITY	ZONE STATE

When inquiring check CP 1130 on handy form, pgs. 2-3

Army's test of computer ran forty-two hours without error . . .

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electronic brain made 4,212,000 computations under test conditions — no mistakes



Computer is made up of desk, memory unit, and electronic units

Army Ordnance officials at Aberdeen Proving Ground have completed tests on a digital electronic computer. Sixty hour non-stop test showed that computer was capable of making 1700 computations a minute consistently. During first 42 hours of this test, computer made 4,212,-000 computations without any mistakes.

Test involved eight different programs pre-recorded on magnetic tape. Once machine was started it was not necessary for operators to make any adjustment during entire period of test.

Unit is made up of conventional type office desk at which operator sits, a compact "memory" unit, and the computer proper. Latter is housed in five steel cabinets joined in a semicircle. Power is taken from standard 110 volt AC line. Manufacturer stresses that computer is relatively small in size compared to older computers with roughly equivalent performance characteristics.

(Elecom 100 is a product of Underwood Corporation, Dept. CP, One Park Avenue, New York 16, N. Y. . . . or for more information check CP 1131 on convenient Reader Service slip between pages two and three.)

How instruments are used to control vat dyeing

Booklet compiles three reprints from American Dye-stuff Reporter. Twenty-seven pages in length, it deals with 1) stabilization of vat dyes at elevated temperatures, 2) instrumental and analytical measurement, and 3) leuco potentials. Booklet deals with problems in maintaining uniformity of true shade because of instability of dyes at elevated temperature. Methods given are reported to be simple and reliable in protecting reduced vat dye baths at elevated temperatures.

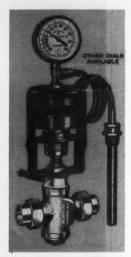
Practical instrumentation methods, analytical procedures, and instruments used to control vat dyeing are described in considerable detail. Special attention is given to redox potentials and their significance in vat dyeing. New term "luco" is presented and explained.

Bul 828 on controlled vat dyeing is issued by Calco Chemical Div., American Cyanamid Co., specify CP 1132 on convenient Reader Service slip between pages two and three.



When inquiring check CP 1133 on handy form, pgs. 2-3

correctly gives temperature of pulp and liquid being heated before entering evaporators. Regulator valve controls steam supply to large heater shown below.



In the Minute Maid Corp.,

Plant at Leesburg, Florida

(POWERS)

TEMPERATURE CONTROL

Helps Regulate Processing of Citrus Fruit By-Products for Animal Feeds

FUEL and LABOR SAVINGS are obtained in this efficiently managed plant of the Minute Maid Corp., by preventing losses of OVER-heating with Powers automatic control. Constant uniform temperatures also help to produce a more uniform quality product.

If you want to maintain any process or air conditioning equipment at a more constant uniform temperature or humidity, contact your nearest POWERS office for help in selecting the right control for your requirements.

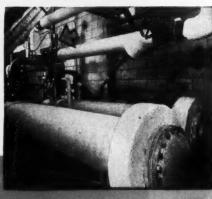
With over 60 years of experience and a wide variety of pneumatic and self-operated regulators POWERS engineers are well qualified to help you get the most value for your money. Phone our nearest office or write—



Above: POWERS Air Operated No. 10 TEMPERATURE REGULATOR controlling valves on Oil Burners and Dampers of HEIL CO. ROTARY DRYER.

Below:

POWERS No. 11 Self-Operated TEM-PERATURE REGULATOR automatically controlling steam supply to large double cylinder heater.



THE POWERS REGULATOR CO.

SKOKIE, RLL. * OVER 60 YEARS OF AUTOMATIC TEMPERATURE CONTROL * OFFICES IN OVER 50 CITIES * SEE YOUR PHONE SOOK
D 13, RLL, 2519 RL Assemblars. • NEW YORK 17, RL Y, 251 E. 44th St. • LOS AMBELES 6, CAL., 1445 W. Biglio St. • TORGOTTO, OWY., 195 Specime Ave.

INSTRUMENTATION

Armor porcelain valves with glass-plastic for safety . . .

1/4 to 2-inch control valves protected against shock

Uses: Porcelain control valves are designed for use with corrosive materials.

Features: Glass cloth impregnated with special resin forms highly inert, durable, corrosion-resistant cladding.

Description: Armored porcelain valves are available in four sizes from 1/4-inch to 2-inch pipe. Powered by air motor, valves are single seated and have flanged porcelain inlet and outlet fittings. Valve stem and plug are usually made of Hastelloy B or C, or tantalum for hydrochloric or sulfuric acid service. Bubble-type shut-off valve seat with Teflon insert can be supplied. Support posts and external parts are identical with manufacturer's regular diaphragm motor valves. Porcelain valves can be supplied as "air-to-open" or "air-to-close."

Highly inert insulation offers maximum protection against thermal or physical shock. Armor will not entirely prevent leakage in event that fittings become cracked but danger to personnel in plant is minimized.

(Control valves are products of Fischer & Porter Co., Dept. CP, Hatboro, Pa. . . . check CP 1134 between pages 2 and 3.)

Applied nucleonics is subject of new publication

Two-color, newspaper-type periodical will discuss applications of isotopes and isotope instruments to chemical processing. Vol 1, No 1 of "Nucleonics Views" carries several stories concerned with automatic calender control, instrument training programs, etc. Four-page publication abounds with on-the-spot photographs and, in short, follows newspaper presentation. "Nucleonic Views" is published by Industrial Nucleonics Corp., Dept. CP, 1205 Chesapeake Ave., Columbus, Ohio. When inquiring specify CP 1135, pgs. 2 & 3.

For more information on product at left, specify CP 1136
. . . see information request blank between pages 2 & 3.

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MAY

Measuring infrared power as simple as using photog's meter . . .

reads directly in watts per square inch for IR from 300 to 3500 millimicrons

Infrared meter is designed to measure radiant energy intensities up to 10 watts per square inch. Designated type DW-69, meter is especially suited for determining intensity of high range, radiant energy sources and for studies of infrared radiation effects. It would be especially useful in determining drying lamp field distribution, aiding in quality control of products, and in experimental studies.

Pocket-size instrument is as simple to use as ordinary photographer's light meter. Thermocouple replaces usual photoelectric cell in photographer's instrument. Thin thermo element provides rapid response — meter need only be exposed for a few seconds when making measurements. Self contained in plastic case, meter reads directly in watts per square inch for radiation in the range of 300 to 3500 millimicrons (3000 to 35,000 Ångstroms).

(Type DW-69 Infrared Intensity Meter is a product of General Electric Co., Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 1137 on handy form, pages 2 and 3.)

Seals thermocouples or leads 3/32 to 3/16-inch in diam

Midget packing gland is designed as standard seal for entry of small dial-type thermometers, thermocouple wells, pilot tubes, static pressure probes, round rods or tubes, or even insulated electric wires. As a tube seal it may be used as standard male connector for tube ends or as a standard compressed fitting. Soft sealant is used which will not damage tube.

Packing gland is machined entirely from type 303 stainless cold drawn bar stock for maximum corrosion resistance. Seal is effected by compression of the packing material under gland follower. This



Gland is shown here in use as a seal for 20-gage duplex thermocouple

affords straight compression of packing and permits rotary slippage during assembly. Threaded connection is standard ½-inch IPS. Choice of packing materials is available with Neoprene and asbestos graphite being usual choices.

Stock sizes are 3/32, 1/8, and 3/16 inch diameter with intermediate diameters available on special order. Length of packing gland is 1½-inch.

Model MPG Rigid Packing Gland is a product of Conax Corporation, Dept. CP, 4515 Main Street, Buffalo 21, New York . . . or for more information check CP 1138 on handy form, pages 2 and 3.)



When inquiring check CP 1139 on handy form, pgs. 2-3

12,000 psi is top limit for pressure-acting switches . . .

six ranges have adjustable set points for alarm, control

Uses: Pressure-actuated switch may be adjusted to operate at pressures within its range. It is suitable for use with liquid, gas, or water systems.

Features: Six classes are available for maximum pressures to 12,000 psi. Limits in each class: 500, 1500, 3000, 4500, 6000, and 12,000 psi.

Description: Pressure-switches sense system pressures over an adjustable range from 15 to 10,000 psi though they are safe to higher pressure limit noted. Switch may be set to actuate at predetermined pressure over adjustable range. If frequent set point changes are to be made, switch can be built with external adjustment. This variable actuation value ranges from 10 to 2000 psi depending on switch class. Actuation may be on increasing or decreasing pressure.

(Meletron Model 314 is a product of Barksdale Valves, Dept. CP, 1566 E. Slauson Ave., Los Angeles 11, Calif. . . . or for more information check CP 1140 on handy form, pages 2 and 3.)

Adds density correction to flowmeter reading for mass rate . . .

units planned for about 20,000 lb/hr with 1% accuracy

Uses: By measuring mass flow rate of clean or dirty liquids, slurries, etc, meter should be useful in continuous automatic control of materials on weight to weight basis, in maintaining critical ratios of solvents to product, and in similar chemical processing applications.

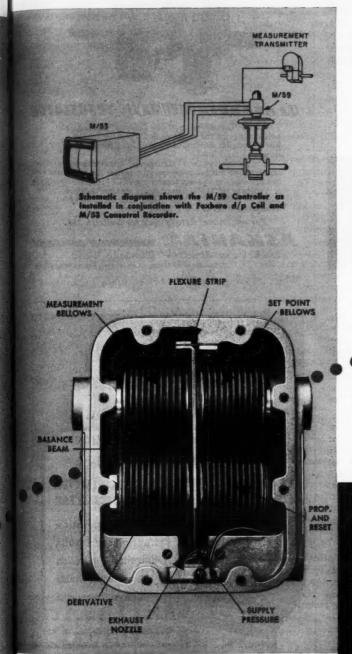
Features: Instrument system makes two measurements. Flow element is accurate to about ½ of 1% through full flow ratio of 1 to 60. Density detector measures variations in density to 1%.

Description: Unit measures flow in gallons but that automatically compensates for weight of fluid. Instrument is continu-

EVOVE CONTROL FLOW



DYNAMICALLY



- Valve Mounted screws directly on valve motor with heavy duty stainless steel ¼" fitting . . . eliminates "lag" commonly caused by transmission lines.
- Fixed Settings exclusive live-balance design of the M/59 Controller permits fixed proportional and reset values for all flow conditions... for all valve motor sizes. (Reset can be field-adjusted for special purposes.)
- Response amazingly fast recovery with precise control regardless of load conditions and process upsets. No control point drift. Unaffected by vibration or wide changes in ambient temperature.
- Seal Valve optional feature which permits isolation of controller and remote manual control of process. Integrally mounted to the bottom of the controller.
- Maintenance-free nothing to align, nothing to wear out. Flexure strip fulcrum eliminates friction and wear of conventional type pivots. Tightly gasketed, completely weatherproof.

Unique Live-Balance Design

Photo of the M/59 with cover removed to show the exclusive, simplified live-balance mechanism. Balance Beam, which moves only a few thousandths of an inch to control the valve motor pressure, is flexure-pivoted and positioned between the four bellows. Any pressure unbalance between the set point and measurement bellows will change position of the Balance Beam. The proportional-reset bellows opposes such unbalance and prevents control point drift, while the fourth bellows provides the desirable amount of derivative action.

FOXBORO
REG U.S. PAT. OFF

INSTRUMENTS
INDICATING
RECORDING
CONTROLLING

ous pounds per hour figure. Measurement of density of the flowing liquid is continuous. Pressure drop through metering element is less than 1 psi at 20,000 pounds per hour, it is reported.

Unit was designed initially for incorporation in aircraft. Size, weight, and immunity to atmospheric conditions reflect this purpose. Components of complete measuring unit weigh less than 8 pounds and occupy only about 1/5 of 1 cubic foot. Density detector measures 31/2 by 21/2 inches and is capable of handling fluids at the rate of 70,000 pounds per hour with a 11/4-inch line.

Units for commercial applications will be powered by 110 v 60 cycle single phase AC and should be available in the near future.

(Mass Rate Flowmeter is a product of Gavco Corp., Dept. CP, 2nd East End Ave., New York, N. Y. ... or for more information check CP 1141 on handy form, pages two and three.)

Counter life doubled, built-in rectifier supplies DC . . .

350 million counts as compared to 150 million before

Built-in rectifier for electric counter operating on alternating current has more than doubled counter life in manufacturer's test. As before, unit operates from 115 v AC, but life is now 350 million counts as opposed to former life of 150 million counts.

Counters with built-in rectification are available from 115 and 230 v AC in standard, panel mounting, and dust-proof types. Models are available for four and six digits and are equipped with either knob reset or key reset.

(Wizard Electric Counters are products of Production Instrument Co., Dept. CP, 702-04 West Jackson Boulevard, Chicago 6, Illinois . . . or reader may secure more information by checking CP 1142 on convenient Reader Service slip, pages 2 and 3.)

For more information on product at left, specify CP 1143
. . . see information request blank between pages 2 - 3.



The successful performance of Roots-Connersville Positive Displacement Meters has long been proved by large and small industrial plants and public utilities. These users rate them high in such basic essentials as:

Accuracy-not affected by pressure, wide ranges in loads or other variables. Absence of valves, vanes and other small parts insures "cash register" accuracy over years of use.

Capacity-from 4,000 cfh to 1,000,000 cfh in one unit, with ample ability to absorb overloads.

Compactness-smallest made for industrial use in foot-for-foot of capacity. Can be located in otherwise unusable space, thus saving production areas.

Almost a century of experience in handling gas and air, exclusively,

goes into the design and construction of R-C Meters. They're part of the comprehensive line of blowers, exhausters, gas and vacuum pumps and related equipment, which are the products of R-C Specialists, and which are in widest use in industry.

A new bulletin, M-152, gives complete data on R-C Meters, including a handy selection table which simplifies your choice of the right meter to suit your specific application. Your copy will be sent on request.



ROOTS-CONNERSVILLE BLOWER A DIVISION OF DRESSER INDUSTRIES, INC. 533 Richland Ave. • Conners ville, Indiana

When inquiring check CP 1144 on handy form, pgs. 2-3

INSTRUMENTATION

Warns whenever flow falls below preset low limit . .

magnets and flow position vane to actuate switch

Unit should have many uses for simple monitoring of noncorrosive fluids.

Features: Flow switch is unaffected by pressure or temperature changes, operation depends on pivoted aluminum vane.

Description: Because it was designed for aircraft use. flow switch combines small size, light weight, and freedom from vibration or acceleration effects. In



Small and unaffected by vibration

operation, when fluid flow falls below predetermined value, restoring and calibrating Alnico magnets force pivoted aluminum vane towards a closed-circuit position. This actuates hermetically sealed glass switch thus operating warning signal. Actuating position of switch is factory set.

(Flow Switch is a product of Dept. 50, Revere Corporation of America, Dept. CP, N. Colony St., Wallingford 2, Conn. . . . or for more information check CP 1145 on handy Reader Service slip, pages 2 and 3.)

Pressure records and control

Engineering drawings, photographs and tabulated data explain pressure gages used for recording and controlling. Fourpage Specification Sheet 709 is issued by Station 40, Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 1146 on convenient Reader Service slip between pages two and three.

Measure & Transmit **MICRO-PRESSURES**



the ASKANIA PNEUMATIC TRANSLATOR

For the transmission of low static or differential pressures . . in the range of 0-1.0 w.c. or higher. For automatic control or recording of pressure, flow, or liquid level.

It measures low-level signals and transmits an air signal or output pressure at a higher level . . usually standard instrument range of 3-15 p.s.i.

Accurate to ±0.5%. Diaphragm measurement of static or differential pressures eliminates trouble associated with mercury manometers.

For additional details, ask for bulletin 154.

ASKANIA REGULATOR COMPANY
242 E. Ontario Street Chicago 10, Illinois

Subsidiary of General Precision Equipment Corp.

When inquiring check CP 1147 on handy form, pgs. 2-3



When inquiring check CP 1148 on handy form, pgs. 2-3

80

CHEMICAL PROCESSING

full 41/2' Stem can at any any

for accura

for angul able posit for reada

in easiest for Inter changeabl

PALMER

Dial Thermometers now in three types to suit any requirements



Rigid Stem Dial Thermometer tapered bulb, interchangeable with standard industrial thermometer separable socket.

(As illustrated above.)

at any angle and

to any readable

position.

Wall Mounted Dial Thermometer with flexible connecting armor, Case adjustable to easy reading position.



Thermometer for panel mounting with flexible connecting armor.

Flush Mounted Dial

All three types have a full $4\frac{1}{2}$ " dial face.

for accuracy: Mercury actuated... Fully Compensated by Invar Compensaton. Guaranteed Accurate 1 scale division.

for angularity: Can be adjusted to most readable position at any angle desired.

for readability: Bold Black Numbers...11" of scale Reading Dial face can always be placed in easiest readable position.

for Interchangeability: Always specify "PALMER" Separable sockets as they are interchangeable for Dial or Industrial type Thermaneters.

Send for Builetin 51-129 for details on the New Palmer Dial Thermometer.

THERMOMETERS, INC.
Norwood Ave., Cincinnati 12, Ohio
Mirs. of Industrial Laboratory
Recording and Dial Thermometers

When inquiring check CP 1149 on handy form, pgs. 2-3

2-3

Reduces pressure to 2 psi for 250 psi air, water or 200 psi steam . . .

valve houses stainless working parts in sizes from 1/4 to 2 inches.

Uses: Reducing valve is designed for service with water, air, or steam. Allowable inlet pressures can be 250 pounds except for steam where maximum pressure is 200 psi.

Features: Valve provides close regulation, can reduce maximum inlet pressure to 2 psi.

Description: Pressure reducing valve consists of a bronze body and stainless steel gate which slides over a fixed stainless steel plate. Phosphor-bronze diaphragm and stainless steel small parts complete valve. Available in sizes ranging from 1/4 inch through 2 inches, valves are compact and can be installed in any position. Tight shut-off makes them useful in dead-end service. They are also self-cleaning and unaffected by sediment. Valve design eliminates packing glands, as well as seats. Fixed place is made with two machine orifices which are covered or uncovered depending on position of sliding gate. Valve operates at temperatures to 400°F. On special order, valves can be made up in stainless steel, carbon steel, nickel, Monel and other metals and alloys.

(Figure 160 Pressure Reducing Valve is a development of Jordan Regulator Corp., Dept. CP, 109 W. Mulberry St., Lebanon, Ohio . . . or for more information check CP 1150 on handy form, pages 2 and 3.)

Versatile, precision instrument controls viscosity

Eight-page, two-color bulletin describes recording viscometer which automatically measures, records, and/or controls viscosity of practically any solution encountered in industry. Models are available for solutions under pressure, vacuum, or at atmospheric pressure. There are also explosion-proof designs for hazardous applications.

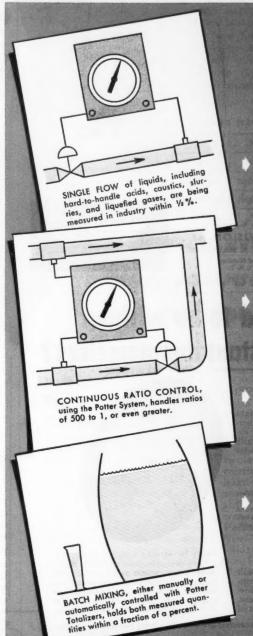
General information given in bulletin includes range of units, sensitivity, repeatability, frequency of readings, voltage and frequency, operating temperatures, and detailed specifications.

Bul V1000E is issued by Norcross Corp., Dept. CP, 247 Newtonville Ave., Newton 58, Mass. When inquiring specify CP 1151, pgs. 2 & 3.

For more information on product at right, specify CP 1152
. . . see information request blank between pages 2 - 3.

When Quality CONTROL Requires Quantity CONTROL

POTTER Measures Flow within 1/2%



WHEN the quality of your product or the efficiency of a manufacturing operation depends on knowing exactly what flow rates are, a Potter Flow Metering System will measure and indicate flow with an accuracy of ½%, and will record flow with an accuracy that is limited only by the legibility of existing instruments. Flow rates can also be controlled with comparable accuracy.

DIFFICULT CONDITIONS such as high temperature or pressure, low temperatures, pressure fluctuations, or hard-to-handle liquids present no problem. The Potter Flow Sensing Element requires no seals, needs no lengthy straight-run piping, can be mounted in any position, is inherently explosion-proof. The unit is easily cleaned to avoid product contamination.

EITHER WEIGHT OR VOLUME can be measured by a Potter Flow Metering System, provided the specific gravity of the liquid remains constant. Rate measuring systems are adjustable for different specific gravities over commonly used ranges.

continuous RATIO CONTROL
systems accurately ratio one or
more secondary flows to a
primary flow regardless of the
comparative volumes. Maximum
flow can be as high as several
thousand gallons per minute,
with secondary flows as low as a
tenth of a gallon per minute.

BATCH MIXING CONTROL permits even greater accuracy than is possible with a continuous ratio system. The total quantity of each of several ingredients can be accurately regulated within a fraction of one per cent—in a completely automatic system. Subsequent operations can be electronically synchronized with predetermined quantity control systems for complete process rebotization.

MORE INFORMATION on Potter systems for measuring and controlling flow and liquid quantities is yours for the asking, at no cost or obligation. Send for literature on Potter Flow Metering Systems.

POTTER AERONAUTICAL COMPANY

85 Academy Street, Newark, N. J.—Phone Mitchell 2-5525

made right to work right

BENDIX-FRIEZ

high-precision thermistors

Whether you use these temperature responsive resistors in standard or special models, you can be sure of this. They'll match your needs for resistance values, size, temperature coefficient, mountings and quality. Made in our own plant under carefully controlled conditions, Bendix-Friez Thermistors know no equal.

STANDARD TYPES FOR IMMEDIATE DELIVERY

Size (inches)	@ +30°C.	@ 0°C.	@ −30°C.
.140 x .75	45.0 ohms	86 ohms	194 ohms
.040 x 1.5	12,250 ohms	26,200 ohms	65,340 ohms
.018 x 1.5	35,000 ohms	82,290 ohms	229,600 ohms

Write for details.

FRIEZ INSTRUMENT DIVISION of .
1450 Taylor Avenue, BALTIMORE 4, MARYLAND

Export Seles: Bendix International Division 72 Fifth Avenue, New York 11, N. Y.

When inquiring check CP 1153 on handy form, pgs. 2-3

Used in this typical application for sensing the temperature of hydraulic oil.



Can you afford to be without corrosion-resistant thermometers?

Production errors caused by thermometer failures can be mighty costly.

The corrosion-resistant, pressure-tight construction of Rochester dial thermometers saves you this sort of expensive trouble. And it practically doubles the life of the thermometer under severe operating conditions.



An exclusive stainless steel welding process bonds case, stem and nut into a single corrosion-resistant unit.

RECALIBRATE ON THE JOB

Rochester dial thermometers are built to stay accurate under rough treatment. But if an unusually hard blow knocks the pointer out of adjustment, you can recalibrate it quickly and

easily by turning a single screw.
You can order money-saving Rochester thermometers from one of our specialized instrument representatives, listed in Sweet's Catalog or the yellow pages of your telephone directory. Or write us direct for further details.

MILLIONS of Rochester dial thermometers are now delivering dependable service



Manufacturing Company, Inc. 86 Rockwood St., Rochester 10, N. Y.

GAUGES AMMETERS

When inquiring check CP 1154 on handy form, pgs. 2-3

INSTRUMENTATION

Mite-sized signals are relayed to 30 amp in one step . . .

tenth of one microamp is plenty of signal for relay

Uses: Relay should make a practical one-step control in onoff applications. Extreme sensitivity coupled with good load handling ability make it applicable to accurate temperature control using very small bimetal elements, liquid level control using direct contacting electrodes, many types of automatic gaging, flame control, and a host of other obvious applications.

Features: Sensitive relay embodies a special circuit (patent pending) which enables a signal of 0.1 microamperes to produce positive switching of loads as high as 30 amp. Input impedance of the relay is normally about 100 megohms — modified circuits with 500 megohms input impedance are available for operation with signals as small as 0.01 or even 0.001 microamperes.

Description: Specific information about relay design is not available at this date because of patent litigation. Circuit em-



ployed in this relay requires less current than conventional sensitive relays and embodies higher input impedance than they do.

Power contacts of relay have snap action, are hermetically sealed. Unit is capable of operating in any position and handles as much as 30 amperes. Contacting and break times of the order of 25 milli-seconds can be obtained.

Variety of models will be available since maximum sensitivity, current carrying capacity, or other characteristics will probably not be needed in some applications. High sensitivity leads to inter-



Floatless ALL ELECTRIC LIQUID LEVEL CONTROLS



B/W CONTROLLER CORPORATION

2204 E. Maple Road

Birmingham, Mich.

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natu

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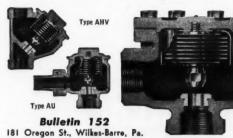
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When inquiring check CP 1155 on handy form, pgs. 2-3

Nicholson Steam Traps

DOUBLE CAPACITY OF THESE DRYERS

That the higher, steadier heat effected by Nicholson thermostatic traps makes them ideal for drying operations was again demonstrated by a large processor. Replacing mechanical traps on 20 drying machines, Nicholsons doubled their capacity, though operating on 16 lbs. pressure against 20 previously. 5 types for every use; size 1/4" to 2"; press to 250 lbs. See why leading plants are increasingly standardizing on Nicholson steam traps.



W.H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

When inquiring check CP 1156 on handy form, pgs. 2-3

82

esting possibilities of flame control. Sensitivity of relay assembly is sufficient to detect difference in conduction between electrodes located within a flame cone. This sensitivity does vary with the nature of the material being burned. In many cases, however, relay would be a practical indicating instrument for presence or absence of a flame.

(Ultra Sensitive Relay has been developed by Para Laboratory Supply Co., Dept. CP, 221 N. Hermitage Ave., Trenton 8, N. J. . . . or reader may secure more information by checking CP 1157 on convenient Reader Service slip between pages 2 and 3.)

Cycles from 30 seconds to 60 min governed with time switch . . .

handles fixed "on" and "off" periods, momentary contact

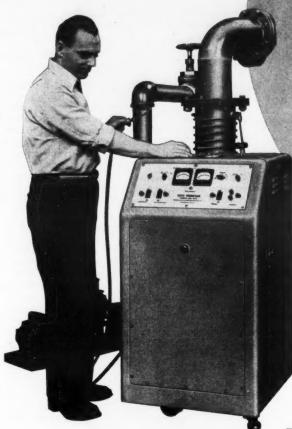
Motor-driven electric timers can repeat on-off switching cycles continuously. Many obvious uses in chemical processing field include batch mixing, heat treating, enamel baking, pump operation, etc. Series of timers make available a large number of models and types with consequent wide range of adjustability and ability to meet many varied requirements of cycle repeating timers.

Slow-speed motor drives indexing wheel carrying pins which actuate timing mechanism. Accuracy can be maintained closer than one per cent of total dial range. Total dial ranges extend from 10 minutes to 24 hours—permitting minimum setting between operations of thirty seconds to sixty minutes. A large variety of electrical switches are available for suitable operation with the timer.

(CR Series Cycle Repeating Timers are products of Paragon Electric Company, Department CP, Two Rivers, Wisconsin . . . or reader may secure more information by checking CP 1158 on convenient Reader Service slip between pages 2 and 3.)

For more information on product at right, specify CP 1159
. . . see information request blank between pages 2 - 3.

ING



Consolidated Engineering Leak Detector, Model 24-101A (above) is a simplified mass spectrometer sensitive to minute traces of belium. It can be used with either the probe or envelope method. The self-contained unit includes mechanical and diffusion pump; and all necessary controls and instruments.

CVC Leak Detector, Model LD-01 (above right) uses a sensitive element containing a beated platinum anode and cold cathode with relatively low voltage between them. The circuit uses standard radio tubes, operates on 115-volt ac current.

0

Here's a G team
that meets every
high vacuum
leak detection requirement

For routine maintenance of your bigh vacuum system—CVC's Model LD-01 Leak Detector is a compact, easily portable unit. It's simple to operate. You just connect the sensitive element to your vacuum system and pump a moderate vacuum. Then, direct a small jet of harmless Freon Gas at suspected spots and watch the meter. You get a direct indication of leak rate.

For production work—the Consolidated Engineering Leak Detector (Model 24-101A) will solve your problems. Whether it's a large vacuum metallizer, vacuum furnace, refrigerator compressor drying system or TV-tube pumping system, this versatile and extra sensitive unit will tell you when it's absolutely leak tight. Most specifica-

tions for hermetically sealed relays now require a leak tolerance detectable only with this type of unit.

Operation is simple—just play helium on the suspected area. An audio system tells the size of the leak by a low or high-pitched sound, or you can watch for it on a meter.

a meter.

Either or both of these instruments will save you many hours of wearisome searching for vacuum leaks. For information on this or any other equipment, for the creation, measurement or use of high vacuum, write to Consolidated Vacuum Corporation, Rochester 3, New York (A subsidiary of Consolidated Engineering Corporation, Pasadena, Calif.) Sales offices: Menlo Park, Calif. • Chicago, Ill. Camden, N. J. • New York, N. Y.

Consolidated Vacuum Corporation

Rochester 3, N. Y.

high vacuum research and engineering

WHERE HEAD LOSS IS IMPORTANT



The Flow Tube is available in types and D/d ratios to handle a wide range of fluids and main line velocities. This flexibility enables you to use the one Flow Tube that will produce differentials that can be accurately measured, with the least head loss.

Flow Tubes have many other plus values—they're compact, comparatively light weight, and are easy to install since they require minimum straight runs entering and following. All Flow Tubes are furnished with head-capacity curves obtained in laboratory tests and can therefore be guaranteed as to accuracy.

That's why Flow Tubes are being successfully used in scores of installations metering the flow of liquids and wet or dry gases. Available in all pipe sizes and suitable metals. They can be furnished with or without suitable secondary indicating, recording or totalizing instruments. For further information, write for Bulletin FT102. For specific recommendations, send us necessary flow data.



PRESSURE REGULATORS . RELIEF AND BACK PRESSURE VALVES . CUSHION CHECK VALVES • FAN ENGINE REGULATORS • PUMP GOVERNORS • TEMPERATURE REGULATORS • FLOAT AND LEVER BALANCED VALVES • NON-RETURN VALVES • VACUUM REGULATORS OR BREAKERS . STRAINERS . SIRENS . SAFETY VALVES . FLOW TUBES

FOSTER ENGINEERING COMPANY · UNION, N. J.

When inquiring check CP 1160 on handy form, pgs. 2-3

INSTRUMENTATION

To control process conditions for optimum product yield and grade . . .

high-speed digital computer is capable of overseeing entire process, manufacturer reveals

Integrating process control by means of a high-speed computer has received much attention recently. Generally speaking, computer would "see" set points and operating conditions at each step in process and, on basis of available raw materials (and their cost) and market conditions make "decisions" leading to best possible production. Such control-by-computer would theoretically maintain process conditions for optimum product yield and grade. A computer reported capable of this is now in the works. First commercial models will be available for delivery in 1954.

Designated ERA 1103, computer has a storage capacity of 17,408 superspeed registers plus unlimited supplementary magnetic tape bulk storage. Operating speed (60 microseconds per unit of addition) enables computer to add 16,700 ten digit numbers in one second. Another desirable feature of computer is its adaptability to various input-output systems. Magnetic tape, teletype, card readers, photoelectric tape readers, analog-digital converters, card punches, electric typewriters, high-speed tape punches, process actuating mechanisms, graphic visual displays, or high speed tabulators can be connected to either

Actual calculations are made at tremendous speed. Computer memory makes use of electrostatic, magnetic drum, and magnetic tape. Control circuits handle routing of information in the computer while problem is being solved.

Electrostatic storage system is capable of reading out data in a few microseconds while magnetic drum is only slightly slower. Tape, however, makes up for its relative slowness by making available storage

Despite size (10 tons) and complexity (4500 electron tubes) maintenance is kept at a practical level. "Preventive diagnostic procedures" are keyed to keeping unit in operation. Severe conditions are imposed so that components of marginal performance can be found and replaced before they show up as causes of operational failure.

(ERA 1103 was first developed for United States Government. It will now be made available through Engineering Research Associates Div., Remington Rand Inc., Dept. CP, 315 Fourth Ave., New York 10, N. Y. . . . or for more information check CP 1161 on handy form, pages 2 and 3.)

Nine valves illustrated and described

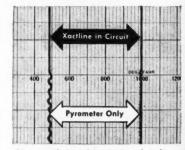
Series of valves for liquid level gages are illustrated and specified in set of one-page data sheets. Each sheet shows photographs and cutaways of valve construction, together with engineering drawings for dimensions. Construction details and features are covered fully.



and it's automatic . . .

Your present indicating or recording pyrometer controls can be made to function more precisely-minimizing overshooting and undershooting—to meet the closest temperature-control requirement.

Simply introducing the XACTLINE into the control circuit will give you this "Straight-Line" temperature control. It automatically anticipates temperature changes before they occur -producing a short on-off cycle. Unusually sensitive performance is due to the complete electric operation-no moving mechanical parts. No adjustment or coordination with the control instrument is necessary regardless of the size of the furnace-electric or fuel fired—length of the heating cycle, or size of the load.



Exact reproduction of temperature chart for a heating process showing the comparison of the "Straight-Line" temperature control produced by XACTLINE and the saw-tooth curve obtained with only conventional control.

PRICE \$89.50 F.O.B. CHICAGO

115 or 230 Volts, 60 Cycle. Complete installation instructions.



CLAUD S. GORDON CO. Manufacturers · Engineers · Distributors

Metallurgical Testing Machines • Temperature Control Instruments • Thermocouples & Accessories • Industrial Furnaces & Ovens

Dept. 19 - 3000 South Wallace St., Chicago 16, Ill. Dept. 19 - 2035 Hamilton Ave., Cleveland 14, Ohio

When inquiring check CP 1162

on handy form, pgs. 2-3

CHEMICAL PROCESSING

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strume Dept. on han Nine Valve Data Sheets are issued by Jerguson Gage & Valve Co., Dept. CP, 80 Fellsway, Somerville 45, Mass. When inquiring specify CP 1163 on handy form, pages 2 and 3.

Meter reading replaces operator's judgment in stethoscope . . .

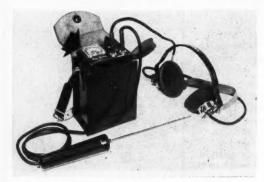
localizes equipment noises, lets operators hear them, and provides a reading of intensity

Uses: This model of sound instrument retains localizing and amplifying characteristics of earlier model. It can be used for finding area where moving machinery is making noise, can also be used to "listen" to flowing fluids, bubble columns.

Features: Present model also provides reading and sound intensity by means of meter. This may be recorded for future reference. It also augments operator's judgment of sound intensity — eliminating errors in judgment due to changes of pitch, characteristics of the noise, etc.

Description: Audio-video model of Elec-Detec employs DC milliameter with a germanium crystal diode. The crystal is highly stable and enables instrument to provide reproducible readings of noise intensity.

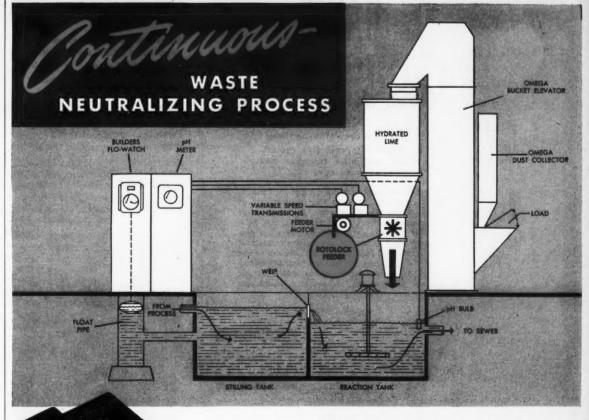
Instrument set is made up of sound localizing probe — microphone is contained in hard plastic handle and connected to any one of several metal probes which can be used for reaching inaccessible places. Probe serves to localize sound, and its microphone sends signal to portable, battery-powered amplifier. Amplifier has flat response (within two decibels from 100 to 4000 cycles, and



Probe, amplifier with meter, and earphones make up sound localizing and measuring instrument

within three decibels to 8000 cycles). Calibrated volume control is provided which controls output to both earphones and meter. When used to record sound level from meter reading, volume control is set at a reference level.

(Mod V Elec-Detec is manufactured by Anco Instrument Div., American Name Plate & Mfg. Co., Dept. CP, 4254 W. Arthington St., Chicago 24, Ill. . . . or for more information check CP 1164 on handy form, pages 2 and 3.)



OMEGA ROTOLOCK DOES THE JOB

Omega Rotolock — a rotating vane feeder — feeds hydrated lime into the reaction tank in response to the flow of acid waste (measured by a Builders Flo-Watch Instrument) and to the degree of neutralization (measured by a pH meter).

The Rotolock is a volumetric feeder of simple design and rugged construction, easily adapted to installations requiring proportional pacing by auxiliary meters. The Feeder, powered by a 1/4 HP motor, has a 100 to 1 feed range. Two models of Omega Rotolock Feeders are available, covering the complete range of feeds from 7.2 to 300 cu. ft. per hr.

OMEGA



(Division of B.I.F Industries



Here's how Omega helped a customer's engineer solve a waste treatment problem for one of the nation's leading manufacturers of electrical and electronic equipment. This acid waste neutralizing "equipment package" comprises feeding, controlling, and metering units required for continuous, accurate operation . . . Omega bucket elevator, dust collector, storage hopper, Rotolock Feeder, and Builders Instruments and Control Panel. Performance of this "package" under actual job conditions has proven again that it pays to take advantage of Omega's engineering and manufacturing experience, when you need continuous proportioning equipment.

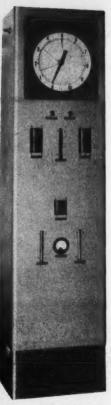
Hundreds of today's processing and production problems are being solved by Omega "packages"—for waste treatment, for proportioning two or more solids, for proportioning liquids and solids. Our engineers can help you—

Send Coupon 7

OMEGA MACHINE CO 387 Harris Ave., Provide	
Send Bulletin 45-H8	describing Omega Rotolock Volumetric Feeders.
Our process problem	n involves:
☐ Waste treatment	Proportioning solids
☐ Proportioning liq	uids and solids
Name	
Company	

When inquiring check CP 1165 on handy form, pgs. 2-3

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DAVIS

Continuous Recording Electro-Conductivity

GAS ANALYZER

WITH

- Water recirculation system
- Water reservoir, flow meters, ion exchange chamber and pyrolyzing furnace

A precision instrument for permanent installation—developed to meet the requirements of industry for quick, accurate gas analysis of chlorinated hydrocarbons, CL₂, H₂S, SO₂, NO₂ (nitrous fumes) etc. in the toxic ranges... plus a continuous record of gaseous concentrations encountered in daily operation. Operates on the principle of differential measurement of conductivity of distilled water before and after gas sample has passed. Semi-portable models are available for on-the-spot analysis.

> Send for literature Bulletin 11-70

DAVIS EMERGENCY CO., INC.



56 Halleck St., Newark, N. J.

When inquiring check CP 1166 on handy form, pgs. 2-3



When inquiring check CP 1167 on handy form, pgs. 2-3

INSTRUMENTATION

Delivers 12 cfm filtered air regulated at 20 psi, from 100 psi line . . .

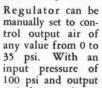
9 x 3-inch diam unit can be set for any output pressure up to 35 psi

Uses: Single, small element filters and regulates pressure of instrument air.

Features: Regulator measures only 9 x 31/8 inches and mounts directly on line.

Description: Combination unit has end cap which houses filter and forms dripwell. This is provided with a connection for mounting pressure gage. Operation is based on pneumatic balance principle, diaphragm chamber is isolated from

output passage and joined by means of a small feed-back passage. Construction prevents full volume of output air from impinging on diaphragm before leaving regulator. This tends to eliminate undesirable buzzing. Design also permits guidance of pilot stem to insure positive seating against supply and exhaust ports - minimizing air consumption.



pressure regulated to 20 psi, unit has maximum air capacity of about 12 standard cfm. Inlet and outlet connections are ¼-inch NPT, and are identified as "in" and "out".

Filter element is self-contained cylinder made from helically-wound ribbons of phenolic plastic-impregnated cellulose. These are electrically fused and polymerized for cohesion. Extremely fine filtration is accomplished by passing the medium between layers of ribbon rather than through them. Particles of oil, water, and solids as small as 40 microns can be removed. Filter element is approximately 13/8 inches high by 11/2 inches in diameter, providing effective filtering area of about 6 square inches.

Filter is held in place by wing nut retainers screwed to stem. It can be cleaned by dipping in a solvent. Reverse air flushing can be used to clean filter while in place — dirt and other impurities are forced from the outer surface into the dripwell.

(Regulator-filter is a development of Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . . or for more data check CP 1168, pages 2 and 3.)



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clogging or corrosion troubles?



TAYLOR LIQUID LEVEL TRANSMITTER

Want to measure accurately the level of liquids that are corrosive or viscous—or contain solids? The Taylor 229R Liquid Level Transmitter is a force-balance unit specifically designed to measure pressure and liquid level of viscous or corrosive liquids and liquids containing solids. No levers or cams, so no frictional error. It's adaptable to open as well as closed tanks, under pressure or vacuum, and can be attached to the bottom or side of the tank to give accurate level measurement. Air output can be connected with an indicator, recorder or controller as much as 1,000 feet away from transmitter.

Ask your Taylor Field Engineer or write for **Bulletin** 98069. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 1169 on handy form, pgs. 2-3



When inquiring check CP 1170 on handy form, pgs. 2-3

INSTRUMENTATION

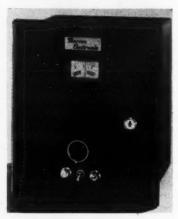
Maintains 1/4 % accuracy of calibration over long periods . . .

on-off temperature controller for temps to 3000°F

Uses: Automatically controls temperature of equipment or in batch process. Control is on-off. Twelve standard scale ranges cover temp from 0 — 3000°F.

Features: Use of null balance potentiometer circuit maintains calibration accuracy of \(\frac{1}{4}\%\) of scale range for long periods without adjustment.

Description: Controller is designed for use with iron-constantan, chromel-alumel, or platinum — platinum-rhodium thermocouples.



Electronic control system uses null balance principle providing both high speed and accuracy. Single moving part is a magnetic control relay which has positive action.

Red and green signal lights indicate temperature conditions and are visible over wide angles at distances to 100 feet. Temperature deviations from control setpoint are of as little as 1°F for iron-constantan, or 1.5°F for chromel-alumel thermocouples trip control relay starting corrective action.

Standard vacuum tubes are used in electronic circuit. Vibration or mechanical shock do not affect operation of controller. Cases are built for protection against corrosive atmosphere, dust, and moisture. Power required is 110 v AC.

(Pyrometer Controller is a product of Thermo Electric Co., Inc., Dept. CP, Fair Lawn, N. J. . . . check CP 1171 pgs. 2-3.)



When inquiring check CP 1172 on handy form, pgs. 2-3

BIDDLE Instrument News



"LUBRI-TACT" feature of JAGABI® RHEOSTATS

insures precise, positive adjustment and long life

Graphite-lubricated sliding contact with molded Bakelite saddle and laminated phosphor-bronze brushes. Solid-wall glazed porend-brackets. Strong, rigid, brass slider bar and strong binding posts. High insulation. Minimum inductance. Strong, durable design matched with expert manufacturing skill. Wound with standard resistance wire or strip. Available in standard types in 76 write for your copy of Bulletin 41-CP.



APIEZON • Oil • Greases • Waxes for Dependability in High Vacuum Work

Distributed in the United States by the James G. Biddle Company, a complete range of these Apiezon products for high vacuum work is regularly available in our Philadelphia stock. Because of exceptionally low vapor pressure of all Apiezon materials at usual room temperatures, they are highly desirable for all low pressure processes in laboratory and industry. You can get the detailed characteristics of each item in the line and list prices by writing today for Bulletin 43-CP.

KIPP & ZONEN GALVANOMETERS New . Portable . No Clamping

Mounted in a east aluminum case. Coil needs no clamping. Suspension system will resist very rough handling. Strength of magnet may be reduced by control knob allowing galvanometer to be critically damped for different external resistances. Zero adjustment is effected by torsion head on top of case. 200 mm translucent scale can be displaced over about 10 mm. A 6 volt filament lamp is mounted inside. Transformer 220/6 volts or 127/6 volts. Made in two patterns, Pa and Pb of different characteristics.

Kipp and Zonen of Holland are renowned manufacturers of specialized scientific instruments-including Microphotometers, Thermopiles, Spectrometers, Monochromators. Represented in U.S. exclusively by James G. Biddle Co. Write for Bulletin 50-CP.



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When inquiring check CP 1173 on handy form, pgs. 2-3

INSTRUMENTATION

Wattmeter covers powers from 0.3 to 9000 w . . .

input voltage impedance is half a meg - accuracy 2%

Uses: Electronic wattmeter has its own amplifier which makes it especially useful for measuring power in low impedance circuits. Instrument is useable with any applicable circuit.

Features: Internal amplifier permits voltage input impedance of 500,000 ohms. This allows accuracy within 2% of full scale even when measured circuit has low impedance.



response flat (±1%) from 20 to 3000 cps

Description: Amplifier of the electronic wattmeter drives potential coil of the dynamometer wattmeter. Calibrated range of the instrument is 0.3 to 300 watts on six scales. Accessory shunts extend the range to 9000 watts. These shunts provide for load currents up to 30 amperes.

Maximum voltage limit is indicated for each wattage range to prevent amplifier overloading and insulation breakdown. Limits vary from 300 volts rms on the 300 and 100 watt ranges to 3 volts rms on the one watt range. Maximum voltage limits are sufficiently high to permit full scale reading with a 30% power factor and 1 amp load. Amplifier is conventional, using negative feedback to maintain accurate ratio between current in the potential coil of the meter and the potential across the load. Ratio is constant within one per cent from 20 to 3000 cps. Amplifier phase shift is negligible, even in low power-circuits.

(Model 110 Electronic Wattmeter is a product of Keithley Instruments, Dept. CP, 3868 Carnegie Ave., Cleveland 15, Ohio . . . check CP 1174, pages 2 and 3.)



When inquiring check CP 1175 on handy form, pgs. 2-3



TEMPERATURE

EXPLOSION-PROOF

WEATHER-PROOF

If you have an automatic control problem involving the control of pressure, temperature, liquid level or mechanical movement, write for Catalog No. 700A. Relays, valves and mercury switches are also listed therein.

THE MERCOID CORPORATION 4201 BELMONT AVE., CHICAGO 41, ILLINOIS, U.S.A.

New York: 205 East 42nd St. Phildadelphia:,3137 N. Broad St.

When inquiring check CP 1176 on handy form, pgs. 2-3

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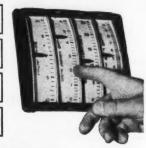
a new miniature indicator!

removable units interior illumination

easy to read—5 inch scale, no parallax

easy correlation of related functions

easy zero check from the front



HAYS Miniscale Gages

This miniature instrument is especially suited for remote indication of such variables as pressure, draft, flow or level.

The scale is only 5 inches long—easy to read—internally

illuminated. Choice of pneumatic or electric transmission. Also available is the Hays direct reading miniscale gage for indicating pressures of fluids (steam, water, gas, oil, etc.) directly. Gages are arranged for flush or semifush mounting. Either a yoke mounting, for as many as 12 units, or a keyhole clamp mounting for individual units can be provided. Write today for Bulletin 52-1075-223.

hays

MICHIGAN CITY,12, INDIANA

When inquiring check CP 1177 on handy form, pgs. 2-3

FOR TESTING FABRICS THAT MUST HOLD GAS



The Cambridge Fabric Permeameter is an accurate, rugged and convenient instrument for production testing of the permeability of fabrics which are to be inflated with Hydrogen, Helium, Carbon Dioxide, etc.

The rate of permeation through the fabric is quickly determined by equipment utilizing the thermal conductivity method and is indicated in terms of liters per square meter per 24 hours of the retained gas.

Manufacturers of fabrics for lighter-than-air Craft, Life Rafts, Life Jackets, Gas Masks, etc., will find this an indispensable instrument. Send for particulars.

CAMBRIDGE INSTRUMENT CO., INC. 3706 Grand Central Terminal, New York, N. Y.

CAMBRIDGE FABRIC PERMEAMETER

When inquiring check CP 1178 on handy form, pgs. 2-3

INSTRUMENTATION

Motor driven index sets time program without cams . . .

controller drives across scale in ten or tweny minutes

Controller with motor-driven index is especially adapted for cascade control systems and for program control without cams. It can be used for cascade control where primary instrument is equipped with electric contacts. In this case it can be used for remote positioning where instrument air is not available. For program control work it must be equipped with externally connected accessories.

Controller consists of standard thermometer controller plus index-setting mechanism. This includes reversible motor, gear train, and two cam-actuated Microswitches. Three indices are color coated — red and purple are limiting indices, green is controlled by reversible motor. Limiting indices stop driven index at predetermined points. These limits are set by adjusting knobs mounted on front of instrument. Additional button permits resetting of driven index to starting position.

Two basic motor speeds provide full scale travel in ten minutes or twenty minutes. Reproducibility of index settings is within 0.5% of full scale. Microswitches may be used for alarms in auxiliary controls, contact rating is 10 amp at 115 volts AC.

(Controller is a product of Brown Instruments Division, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . . check CP 1179, pages 2 and 3.)

Reports on construction, specs of valves

Details of construction and complete specifications of valves are reported on in 44-page catalog. Needle, globe, plug, check, relief, and special valves are listed.

Units listed are made of various metals including brass, bronze, stainless steel, and aluminum alloy. They are suitable for instrumentation, processing, and hydraulic systems.

Cat 352A is issued by Republic Mfg. Co., Dept. CP, 1930 W. 77th St., Cleveland 2, Ohio. When inquiring specify CP 1180 on handy form, pages 2 and 3.



Helpful data for <u>you</u>...

about Flame Photometry!

NOW, FOR THE FIRST TIME a prominent flame photometry consultant gives you the fine points to watch for in selecting flame photometry equipment.

YOU LEARN WHY the monochromator is far superior to glass filters ... why acetylene gas is better than city gas ... why atomizer-burners are preferable to spray chambers. This bulletin gives the detection limits of more than 40 common and rare elements—plus a handy chart of emission characteristics for typical elements determinable by Beckman Flame Photometry equipment. It outlines typical applications in food, petrochemi-

cal, metallurgical, agricultural, biological, chemical and many other processing operations!

DISCOVER HOW YOU CAN FIND NEW PROFITS with Beckman Flame Photometry. This equipment is moving so rapidly to the forefront as one of the most useful of analytical tools that many potential users are not yet aware of the great savings, increased profit and quality obtainable with it. This bulletin describes these benefits and provides practical comparisons you can make to prove the superiority of Beckman Flame Photometers in your own operations.



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Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Radioactivity Meters — Special Instruments

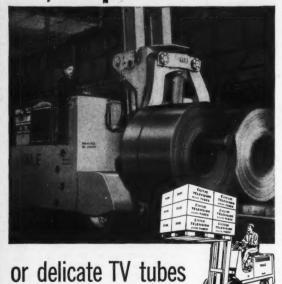
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MAY, 1953

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100,000 pounds of steel



Yale Electric Trucks give you the safer way to move more materials

No matter what your handling problems may be, you can solve them with YALE Electric Trucks. Industries of every kind...companies of every size ...are cutting handling costs as much as 75% with YALE equipment and methods...saving time, work and manpower, too. Get one of the wide range of standard models in the capacity you need to become your plant's most versatile tool...or get specialized trucks or attachments for your specialized handling jobs. One or both...a single truck or a fleet...you'll get more maintenance-free, 'round-the-clock service with safer YALE TRUCKS.

YALE*

MATERIALS HANDLING EQUIPMENT

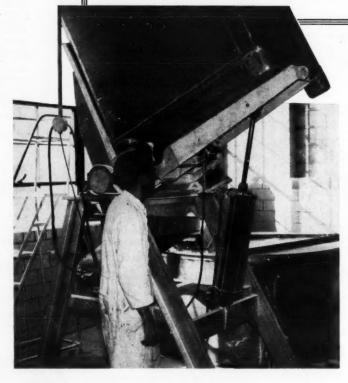
Name Title Street City State	Roosevelt Blvd.	and Haldeman Ave., Phila. 15, Pa. your local representative call for nent,
Street City State	Company	
In Canada write: The Yale & Towne Mfg. Co., Box 337—Postal Station "A"—Toronto	CompanyName	Title

Gas, Electric, Diesel Lift Trucks • Worksavers • Hand Trucks Hand and Electric Hoists • Pul-Lifts

When inquiring check CP 1182 on handy form, pgs. 2-3

material handling

Bins lead lively life in plastics plant when adapted to uniform blending and transporting of molding materials



Tilting device sends another load of plastics into the processing system

T HROUGH use of portable bins, fabricated from high strength aluminum alloy, bulk handling of plastic molding materials at the National Plastic Products Company plant at Odenton, Md. moves speedily, production costs have been cut, and dusting and spillage during handling and dumping have been eliminated.

No fibers contaminate product, warehouse space needs are cut, dust and spillage are eliminated

The bins used at the firm have a capacity of 74 cu ft and can be moved by truck (15 to a load) between the plant and the company's source of materials. Five company-owned trucks make the 1500-mile round trip. In unloading, the bins can be piled high; built-in legs permit handling with a standard lift truck. The units can also be hermetically sealed for transit or storage.

When the molding powder is ready for discharge, the bins are placed on an elevated gravity-type tilt and the material is then discharged into a vibratory conveyor which delivers it at the desired rate to a surge hopper. (In other installations where the type of product being handled makes it feasible, the material can be discharged into a screw conveyor. In some installations, automatic scale equipment is used to draw small batches from the bin.)

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Fig. I Aluminum alloy bin loaded with plastics molding material is loaded by lift truck onto elevated tilt

In switching from fiber bags and drums to the bin-system, the company claims the following benefits: 1) reduced labor handling costs; 2) a reduction in warehouse space requirements; 3) elimination of product loss; and 4) elimination of product contamination from outside sources and from fibers ordinarily picked up from bags and drums during this operation.

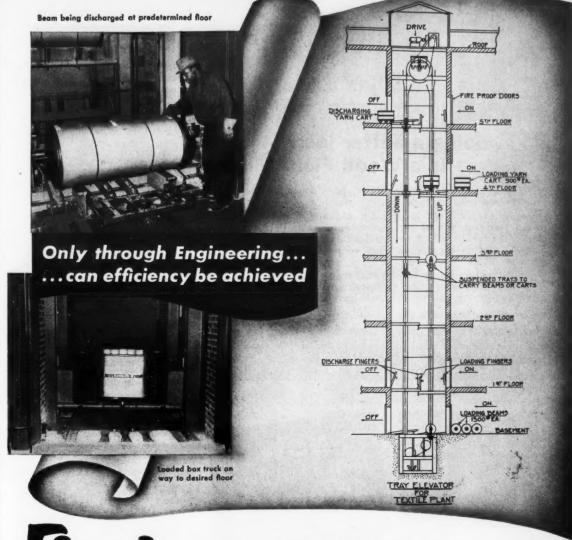
(Materials handling system using a combination of the Aluminum alloy bins and the tilt device used in the system are products of Tote System, Inc., Dept. CP, Beatrice, Neb. . . . or for more information check CP 1183 on handy form, pages 2 and 3.)

Booklets deal with all phases of material handling

Treating material handling as a science of industrial operation, two booklets present a basic outline of all phases to be considered. Booklet No. 1 deals briefly with an overview of major objectives of material handling operations. It states that methods and equipment should be governed by consideration of: reduction of handling costs; increase of capacity; improvement in working conditions; and better distribution. These objectives are discussed and illustrated, and booklet includes bibliographical material which may be used as a follow-up.

Booklet No. 2 is more specific in its approach considering general rules, analysis of problems, and development of cost data. Such topics as methods, plant layout, equipment, and the training of personnel are discussed under rules. Analysis of problems includes a discussion of receiving, production, and shipping, as well as a consideration of flow process charts and investigation procedures.

To obtain Booklets No. 1 and No. 2 remit 50c per booklet direct to The Material Handling Institute, Inc., 811 Clark Bldg., Pittsburgh 22, Pa.



saves *25,000 a year with this G-W "Ferris Wheel"

Moving 1300-lb. beams of rayon and 900-lb. box trucks in and out of freight elevators is a back-breaking job. Yet approximately 230 of these bulky loads must be lifted (and empties returned) every day at the Firestone Textiles Division of the Firestone Tire

and Rubber Co., Gastonia, N. C.
This Gifford-Wood "Ferris Wheel"-a 6-story roundabout tray elevator-has assumed most of the work load. Beams and trucks are automatically picked up on the loading side of a shaftway by trays suspended between two endless chains, carried to the top, eased over the drive sprockets, lowered to the desired floor, and automatically discharged.

38405

The \$25,000 annual saving is basically one of reduced labor requirements and improved handling efficiency, and the limited manual work remaining is much less strenuous than formerly.

This is just one of many conveyors born of G-W ingenuity and experience-a product of efficiency through engineering. Call on G-W Materials-Handling Engineers to survey your present methods; you are under no obligation. It might well prove to be a step toward higher profits through lower operating and maintenance costs.

When You Think of Materials Handling-Think of

NEW YORK 17, N. Y. ST. LOUIS 1, MO. CHICAGO 4. ILL. 420 LEXINGTON AVE. RAILWAY EXCHANGE BLDG. 565 W. WASHINGTON ST.

When inquiring check CP 1184 on handy form, pgs. 2-3





"... doing a better job ..." in a Wood Flour Mill

Mr. James B. Stamps, Vice-President, Allen-Rogers Corporation (turned wood products) recently wrote:

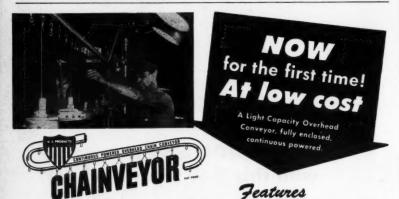
"Our new flour mill has been in operation for something over a year now, and we have had an opportunity to observe closely the results which we are obtaining from the sifter, magnets, and stream splitter which we purchased from your company.

"We are very happy to tell you that in all cases these are performing satisfactorily and are indeed doing a better job than any other similar devices which we have used in the past."

Perhaps your plant can profit from the use of RICHMOND SIFTERS, too.

RICHMOND MANUFACTURING COMPANY LOCKPORT, NEW YORK

When inquiring check CP 1185 on handy form, pgs. 2-3



-Engineered to eliminate complicated, fast wearing parts, Chainveyor is revolutionary in simplicity of design.

Track-1%"x %" slotted steel tube easily installed with minimum support.

Chain - Full ball bearing wheels mounted on steel side links, heat-treated for long life.

Curves-15" radii provides extreme flexibility.

Take-Up-Adjustable spring take-up automatically maintains uniform chain tension. Vari Speed Drive—Positive sprocket tooth drive with easily replaceable shear pin protection.

Capacity -30# per pendant at 6" intervals, 60# at 12" intervals when supported by 2 pendants with cross bar attachment. — up to 400# chain pull.

If your conveyor requirement falls within its

capacity-INVESTIGATE CHAINVEYOR. It is truly revolutionary in the materials handling field. Write today for full information. Dept. A

Distributors:

Mathews Convoyer Co. Eliwood City, Pa. vs Canveyer Co. West Coast San Carles, California

Conveyor Systems, Inc. Chicago, III.



UNITED STATES SPRING & BUMPER CO.

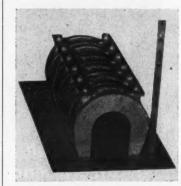
4951 Alcoa, Box 2475 Terminal Annex Los Angeles 58, California

When inquiring check CP 1186 on handy form, pgs. 2-3

MATERIAL HANDLING

Use of Alnico metal improves magnet strength 50%

Improved magnetic strength by as much as 50 per cent through use of Alnico blocs of a new de-



Magnetic force increased by half

sign has been announced for manufacturer's line of low-cost, nonelectric, permanent plate magnets for removing tramp iron from material carried in chutes, ducts, or on belts.

Models 1-H and 2-H Perma-Plate magnets are Mill Mutal approved for Class A and Class B installations. Their magnetic strength carries manufacturer's lifetime guarantee.

(Development of Dings Magnetic Separator Co., Dept. CP, 4780 W. Electric Ave., Milwaukee, Wisc. . . . or for more information check CP 1187 on handy form, pages 2 and 3.)

Tells how, what, why of roller chains

Complete details on the use, and advantages, of the user making up his own lengths of roller chain (from 10' lengths) are illustrated and described in 24-page book. Assembly diagrams and charts for all size chains are presented as well as list prices and boxed assembly specifications. List prices, strengths, dimensions and weights of standard roller chain are also given.

Bul 52-2 is issued by the Baldwin-Duckworth Div., Chain Belt Co., Dept. CP, Springfield 2, Mass. When inquiring specify CP 1188 pgs. 2 & 3.



HOMAS TRUCK & CASTER CO.

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When inquiring check CP 1189 on handy form, pgs. 2-3



USE THE

The Stephens-Adamson Swivel-Piler mounts on the end of your fixed or portable conveyor . . . hurls up to 50 tons per hour of materials up to 20 feet in any direction. This makes possible stockpiling of up to ten times the amount of material handled by the conveyor only from one position. Materials handled include coal, lime, salt, sulphur, ammonium sulphate, clay, borax and similar bulk materials up to 2" lump size. Investigate this cost-cutting timesaver today.



STEPHENS-ADAMSON MFG. CO. Merchandise Division 11 Ridgeway Ave., Aurora, III. Please send me: ☐ Bulletin 650 on Conveyor Mount Swivel-Piler ☐ Bulletin 550 on Wheel Mount Swivel-Piler

When inquiring check CP 1190 on handy form, pgs. 2-3



VACUFLOW

Dustless
POWDER
FILLING

Vacuflow powder filling equipment operates on a principle of vacuum feeding, instead of pressure, to pack powder into a container.

Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem

with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speeds of 45 to 300 per minute.

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning, powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

PNEUMATIC SCALE CORP., LTD. 67 Newport Ave., Quincy 71, Mass. Also: New York; Chicago; San Francisco; Los Angeles; Seattle; Leeds, England



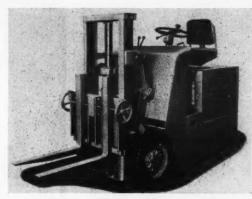
When inquiring check CP 1191 on handy form, pgs. 2-3

Frequent lateral fork adjustments can be done quickly, easily with screw action . . .

as a manual side shifter, device facilitates pickup loads in tight quarters

Uses: On gas and electric powered fork trucks where frequent lateral fork adjustments must be made yet maintaining positive positioning.

Features: Independent lateral action of either fork is possible by turning respective screws. At-



Handwheels move forks laterally, independently

tachment facilitates car loading and unloading operations by enabling lift truck to pick up loads too close to the side of the car to permit conventional fork spacing.

Description: Unit known as screw adjusting forks consists of a frame which attaches to a standard load elevator on manufacturer's line of gas and electric powered fork trucks. Frame supports a pair of large diameter screws having machine cut Acme screw threads. As these screws supporting the forks are turned, either by handwheels (as shown) or by a detachable crank handle, the forks are moved laterally and independently. A single screw can also be supplied if applications require spacing of both forks simultaneously.

(Development of the Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland, Ohio check CP 1192, pgs. 2 & 3.)

Box car load-securing device described

Permanent lock-in device for box car loading is described in 24-page, 2-color bulletin. It is reported that this device eliminates damage and dunnage costs for materials shipped in load-securing equipped cars. Device makes possible heavier loads, which enables two box cars to carry the lading normally carried in three cars, according to manufacturer.

Bulletin on DF Loader is available from Evans Products Co., Dept. CP, Plymouth, Mich. When inquiring specify CP 1193 on form, pgs. 2 & 3.



When inquiring check CP 1194 on handy form, pgs. 2-3

2-3

NG





Averages 1 Cubic Foot of Air per Pound of Materials Handled

the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON Air Activated CONVEY

A Division of Morse Boulger Destructor Co.

CONVEYOR SYSTEMS

211-V EAST 42nd ST. • NEW YORK 17, N. Y. Representatives in Principal Cities

When inquiring check CP 1195 on handy form, pgs. 2-3

MATERIAL HANDLING

Vertical handling of trays, cartons, boxes is fast with subveyor . . .

containers kept right side up and move without jarring

Uses: For vertical handling of materials in trays, cartons, boxes, etc. where continuous flow is desired.

Features: Containers (up to 30 per min) are held right side up and without being jarred or jolted.

Description: Packages handled by subveyor are supported by flights on endless chains affording a continuous flow. Automatic



Furnished in almost any height for continuous flow

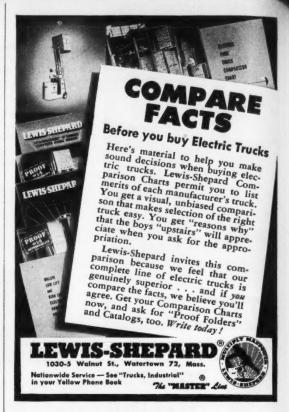
loading from horizontal feeding conveyors, or automatic unloading onto horizontal conveyors at the discharge point can be provided. Units can be furnished to almost any height to handle continuous conveyor flow.

(Development of the Samuel Olson Manufacturing Company, Dept. CP, 2418-22 Bloomingdale Avenue, Chicago 47, Ill. . . . or for more information check CP 1196 on handy Reader Service slip between pages 2 and 3.)

Gives data on solving barrel handling

Manufacturer's bulletin gives latest information on barrel trucks, barrel drain stands, barrel skids, barrel up-enders, and other "Time Saver" units.

Bul B53 is issued by Thomas Truck & Caster Co., Dept. CP, Keokuk, Iowa. When inquiring specify CP 1197 on handy Reader Service slip between pages 2 and 3.



When inquiring check CP 1198 on handy form, pgs. 2-3



of Ballymore ladders that are saving time and money and increasing capacity of storage space in business and industry. Send for your free copy today.

BALLYMORE WAYNE 10, PEN			
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When inquiring check CP 1199 on handy form, pgs. 2-3

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CHEMICAL PROCESSING

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WAS

On-off operator is considered in lift truck designed for close quarters . . .

single lever controls direction and acceleration, unit can turn 360° within its own length

Uses: For materials handling in warehouses and freight terminals where close quarters and narrow aisles require high visibility and where driver must continually mount and dismount.

Features: Low platform enables operator to mount or dismount with minimum effort. Ac-



Easy on, easy off

celeration and direction of travel are controlled through forward or backward movement of a single lever. The 60" turning radius and 360° steering allows trucks to operate within its length.

Description: Called the Stoway, this electric fork truck has a capacity of 2000 lb at 24", 2500 lb at 15", 1650 lb at 30". Two methods of braking are featured. Heavy duty, hydraulic brakes on the drive wheels serve regular and parking brake operations. Positive control reverse "torquebraking," which occurs when the travel control lever is reversed, is also employed.

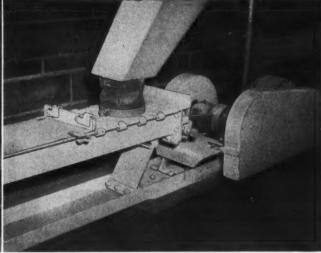
Drive and pump motors are completely enclosed against corrosion, condensation, and foreign particles. The drive motor is mounted directly to the drive axle, thus eliminating all connecting components such as shafts, chains, and sprockets.

Automatic acceleration system has a pre-set time delay between each point of power. Manufacturer reports it is impossible to overload motor by fast shifting or by simultaneously applying both forward and reverse power.

Travel speed is 6.5 mph empty, 6 mph loaded, with four speeds forward or reverse. Underclearance at center is $4\frac{1}{2}$ ". Rolled steel telescopic uprights are available in sizes from 72 to 132" maximum fork height. Standard upright for the unit has 94" maximum fork height.

(Development of Industrial Truck Div., Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . . or for more information check CP 1200 on handy form, pages 2 and 3.)





Left: 57-ft. long Flexmount Oscillating Conveyor with multiple dust-tight discharge gates, distributing material to storage bins. Right: Compact, feed-end-drive assembly of Flexmount Oscillating Conveyor.

For hard-to-handle materials... get FLEXMOUNT Oscillating Conveyors now available from stock

If you need conveyors in a hurry, stop in at your nearby Link-Belt sales office or distributor. Under a new policy, they can offer you stock sections of Link-Belt FLEXMOUNT Oscillating Conveyors. Available in 8, 12 and 18 in. trough widths, they can be combined to make any length desired with no delay for engineering.

The gentle, uniform flow provided by FLEXMOUNT makes it a natural for moving a wide range of difficult-to-handle materials, And you can utilize the free testing service offered by Link-Belt. With complete laboratory facilities and test units, our engineers can quickly determine whether FLEXMOUNT can serve your requirements.

Or, if your product is one of those listed at right, it means that Link-Belt FLEXMOUNT Oscillating Conveyors have already been successfully applied on this material. Ask your Link-Belt representative for a copy of Book 2478 containing application and selection information.

LINK-BELT Flexmount Oscillating Conveyors handle many materials efficiently...

Aloxite Aggregates Aluminum ore sinter Aluminum oxide Asbestos, shredded Ashes Bands, rubber Beans Blades, steel Bolts and Nuts Bottles, broken Buttons Calcine crystals Carbon black, pelletized Carborundum Castings Clips, paper Chrome ore Chips, C. I. Chips, steel Clay Cocoa beans Cork Cullet, glass
Dolomite limestone
Dust collector fines Filter cake Fullers Earth, spent

Glass, broken Grains Grit Ilmenite ore Litharge Links, chain Milk, dried Magnesium floride Manganese dioxide Mica flake Newspapers, bundles Nut meats Packages Paraformaldehyde, dry Parts, iron, steel and wood Phosphate nodule dust Phthalic flakes Punch press scrap Resin Rubber pellets Salt Sand, foundry Sand and gravel Saw dust Scale, mill Shale, ground Slag Shot, steel Slugs, steel Stone, crushed Sugar Tanbark Turnings, steel Wood chips

Heavy duty units available for larger capacities and heavy duty applications

How Positive Action moves materials



Positive-action, constant-stroke eccentric drive provides a powerful, yet gentle upward and forward oscillating motion. Large volumes of material are moved in a uniform, continuous flow, regardless of surges. Resonant spring action of resilient legs cuts power requirements to



FLEXMOUNT OSCILLATING CONVEYORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 1201 on handy form, pgs. 2-3

Packages and cartons still cling to belt conveyor inclined at 55° angle . . .

5700 tiny rubber blocks in each square foot of surface provide gripping action

Uses: For belt conveyors, especially where packages are to travel up or down sharply inclined planes.

Features: Packages or cartons are held in place on conveyor belt at angles up to 55°. This steep angle operation also results in space savings.



Packages go up grades as steep as 55 degrees

Manufacturer's engineers claim that with the new belt, by designing installations at 45°, 42 per cent less floor space is needed than that required for installations at 30°. On the same basis, conveyors shorter by 29 per cent can be used.

Description: Griptop rubber belt for package conveying is self-cleaning. Secret of its gripping power is special ridged and cross-cut rubber surface. The flexible molded rubber ridges are parallel and run across the belt width. They stand 1/4" high and are cross-cut to form more than 5700 tiny gripping blocks of rubber for every square foot.

(Development of the B. F. Goodrich Rubber Company, Dept. CP, Akron, Ohio . . . or for more information check CP 1202 on handy form, pages 2 and 3.)

Where single and double-faced pallets are used, two-in-one truck handles both . . .

unit has 4" lift, adaptors can give skids underclearance of up to 12"

Uses: For plants using both single and double-faced pallets.

Features: Load lift pallet truck handles both single and double-faced pallets. Truck has 4" lift, can be also furnished with hinged adaptors to allow it to be used with skid platforms up to 12" underclearance when necessary.

Description: Model SD lift pallet truck, made entirely of steel, is available in 3000, 5000, and

We make -"PIPE DREAMS" come true

SPROUT-WALDRON equipment and systems for

HANDLING · MOVING · LOADING UNLOADING BULK MATERIALS

-PNEU-VAC-

Sprout-Waldron's Pneu-Vac will probably bring reality to your plant engineer's dream of truly efficient materials handling ... because Pneu-Vac (a negative pressure system) has many advantages over conventional pressure systems.

Pneu-Vac is ordinarily lower in first cost, lower in power consumption, and *much* lower in maintenance costs. This unit gives unexcelled performance in conveying granular, powdered, and flaky materials. The materials do not pass through the fan;

so the Pneu-Vac, with controlled air velocity, handles them gently. As a result it can be used for conveying friable materials where particle size reduction is to be avoided.

Pneu-Vac is specially engineered for individual processing needs. It is self-cleaning and can be designed to aerate, cool, and dry. Dust is eliminated, hazards reduced, working conditions improved, production speeded up. You can save time, labor, space, and money with Pneu-Vac.

Sprout-Waldron materials handling equipment and systems are being used today in thousands of conveying jobs in the processing field and in other industries. Check the list of materials on the adjacent page. If you are handling any of these materials, Sprout-Waldron offers you . . .

- Pneu-Vac, spiral, and belt conveying systems covering a wide scope of applications.
- A broad background of experience in solving many types of conveying problems.
- 3. Complete facilities for engineering, pilot testing, and fabrication.

Get full information! Write to Sprout-Waldron & Co., Inc., 10 Logan St., Muncy, Pa.



SPROUT-WALDRON

— Manufacturing Engineers-

M U N C Y · P E N N S Y L V A N I A

MODERN EQUIPMENT FOR: Size Reduction . Mixing and Blending . Bulk Materials Handling . Product Classification . Pelleting & Cubing

When inquiring check CP 1203 on handy form, pgs. 2-3

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ABRASIVE AMMONIL BAUXITE GLASS BETA-NAP BEANS CANDY (H CHALK CHACKOAI COKO COCOUNT CRACKER BOG BISC)

CORK
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NATURAL S
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FLOOR TIL

GASKET SI RAISINS SOFT RUB PLASTIC S

ALPHA PUI ALFALFA ANIMAL GI BARK BEET PULP BAGASSE ASBESTOS BARBASCO COTTON FELT FLAX FIBERBOAF

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BEANS
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CHAIK
CHARCOAL
COKE
COAL TAR PITCH
CLAM & OYSTER SHELLS
COCOMUT SHELLS
CRACKERS
DOG BISCUITS
EGG SHELLS

DRIED GELATIN
GLUE
SINTERED IRON OXIDE
LIME
SELENIUM
RESINS
WOOD ROSIN
WELDING FLUX
HARD RUBBER
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SOFT & PLIABLE

CORK FRUIT SKINS PARA-DICHLOROBENZENE SPONGE RUBBER ASPHALT SHINGLES NATURAL SPONGES WAXES

FLOOR TILE

TIRE SCRAP
GRAINS
VEGETABLES
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GASKET SCRAP WHEY RAISINS YEAST SOFT RUBBER PRODUCTS DDT PLASTIC SCRAP

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PEAT MOSS—MINERAL OIL
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AUMONIUM CHLORIDE—WATER
TITANIUM DIOXIDE—MOLASSES
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ALUMINUM OXIDE—CATALYST SOLUTION

SPROUT-WALDRON SPECIAL FACILITIES

- · Fabricating
- · Machining
- Custom Founding Woodworking
 - Laboratory Testing

FOR ADDRESS SEE

10,000 lb capacities with either steel, rubber, or plastic wheels. Both front and rear wheels are equipped with sealed ball bearings.

Headroom (space ahead of the pallet) is $14\frac{3}{4}$ "—not including 2" space for overhanging loads—which allows truck to be maneuvered in narrow



Handles both single and double-faced pallets

aisles. Overall width is 27". Forks are 91/4" wide, and opening for the center runner of pallet is 81/2" wide. Other features include: simple hydraulic lifting mechanism, heavy-duty fifth wheel steering arrangement, and balanced spring handle hold up.

(Development of Market Forge Co., Dept. CP, Everett, Mass. . . . or for more information check CP 1204 on handy Reader Service slip between pages 2 and 3.)

Catalogs lightweight materials handling equipment

Catalog on lightweight materials handling equipment covers complete line of company's trucks which are entirely constructed of aluminum and weigh from one-third to one-fourth as much as conventional wood or steel trucks. For example, a platform truck weighs only fifty-seven pounds yet has a load capacity of two thousand pounds. Other lightweight equipment included in catalog are A-frames, tote boxes, work tables, and stack racks.

According to manufacturer, aluminum materials handling trucks are easier starting, easier operating, present no painting or other maintenance problems, are non-sparking, and have long life. Permanently lubed bearing casters are part of truck's equipment.

Construction features include flexibility. Manufacturer reports there are many advantages to having equipment flexible: wheels are always on the floor, shop noise is reduced considerably, and the shock load is absorbed over a single wheel and not by the entire truck.

Catalog on lightweight materials handling equipment is available from Tobey Mfg. Corp., Dept. CP, 1221 El Segundo Blvd., El Segundo, Calif. When inquiring specify CP 1205 on handy form, pages 2 and 3.



WHICH POWER TYPE IS BEST FOR YOU?

No two jobs

...electric, gas, diesel or L.P. gas?

WHEN THE ANSWER
IS *Electric*CLARK ELECTRICS
ARE THE ANSWER
...Here's why:

- 1 Better battery efficiency—users report more work per amp-hour with CLARK.
- 2 Greater stability
 —safer for load,
 safer for operator.
- 3 Faster acceleration, greater speed —gets more work done, covers more ground.
- 4 Safer, smoother stops—with CLARK's positivecontrolled, reverse torque braking.
- 5 "Applicationengineered"—for special requirements, CLARK provides custom engineering.

No two jobs are exactly alike, so there's no such thing as one "best" power type. Which type is best for you?—that's the important question. The only person who can give a really unbiased answer is one who knows them all, and knows where they fit.

That's your local CLARK Dealer. He carries electric, gas, diesel and L. P. gas units—and he's got no ax to grind for any one. His object is to provide the one that's best for you. For example, careful application analysis often proves that electric trucks are best for certain jobs because of these advantages:

- ★ Economical operation on low-cost electric power
- ★ Long life, less maintenance—electrics have fewer, simpler moving parts
- ★ Smooth, vibration-free handling of fragile loads, less wear on truck
- * Quiet, clean operation

Which power type is right for you? No matter what it is, you'll find it in the CLARK line of quality handling equipment. You'll always be right when you buy from CLARK.



CLARK FORK TRUCKS AND POWERED HAND TRUCKS - INDUSTRIAL TOWING TRACTORS DOUGTHAN TRUCK DIVISION - CLARK EQUIPMENT COMPANY - BATTLE CREEK 9, MICHIGAN

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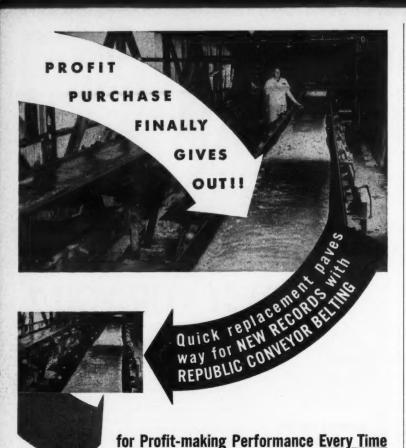
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATI

When inquiring check CP 1206 on handy form, pgs. 2-3

317

& Cubing

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The real keys to Profit Purchasing are performance and service. International Mineral & Chemical Company proved this on a tough job moving debris and wet rock tailings up a 15° incline at their Peace Valley Mine

buy REPUBLIC RUBBER PRODUCTS

Although the load contains oily chemical materials which spell death for ordinary conveyor belts, there's been no trouble since Republic's Oil-Resistant Excelo Belts and Republic's local Distributor went to work. Here's the record:

Five years, non-stop performance, more than 10 million long tons of material moved before replacement was recommended for the first belt! At that time, Republic's local Distributor was on hand to see that the switch was made smoothly and economically. Republic's Distributor will also be on the job when the second, younger belt needs replacement. Republic is always ready with the right product for your job and the kind of servicing policy that builds long-lasting and profitable relationships between you and the specialist in Industrial Rubber Products.



Your local Republic Distributor can belp you plan, select, apply and maintain any product of Industrial Rubber. If his name is not listed in the yellow section of your telephone directory, it will pay you to write us now for his name and address.



LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

When inquiring check CP 1207 on handy form, pgs. 2-3

MATERIAL HANDLING

Safety is main keyword of electrical trolley system . . .

collector can efficiently carry loads from 50 to 2000 amp

Uses: System is applicable wherever current collectors are used such as for traveling cranes, mine and power applications, ore bridges, ingot buggies, etc.

Features: Collector is capable of safely carrying loads from 50 to 2000 amp.

Description: In construction of U-S Safety Trolley System, a conductor is enclosed within an insulating sleeve, split at the bottom to provide for entrance. It surrounds a trolley shoe supported on a ball joint for flexible action. Shoe is made of copper alloy that matches the conductor, which serves as a guide track as well as means of conducting current. The shoe is spring-supported to compensate for vertical irregularities.

(Development of Universal-Standard, Inc., Dept. CP, 633 Washington Road, Pittsburgh 28, Pa. . . . or for more information check CP 1208 on handy form, pages 2 and 3.)

Bulk material handling system is automatic

Sixteen-page, 2-color catalog describes automatic equipment for bulk material handling. Equipment is said to be a complete, mechanical, system for filling, transporting, storing, discharging, weighing, and blending all types of bulk materials, including liquids.

Heart of system is an easily handled aluminum bin available in 3 standard sizes. Completing system are automatic filling equipment and automatic discharging equipment. Systems are in use in industries handling products including soap, detergents, cement, whiting, carbon black, powdered plastics, fluorescent powders, ethocel, phthalic anhydride, and polystyrenes.

Catalog No. 3 is issued by Tote System, Inc., Dept. CP, Beatrice, Nebr. When inquiring specify CP 1209 on handy form, pages 2 and 3.



Let's assume you're a Conveyor-Project Engineer employed by Hapman —

QUESTION 1—Which materials in panel would you advise can be efficiently handled by Hapman Tubular Sealed-pin Chain Conveyors?

QUESTION 2—To elevate a granulated chemical 29 ft. above floor, at 2,000 lbs. per hour, what motor would you specify?

1 H.P.___ 2 H.P.__ 3 H.P.___ 5 H.P.__

QUESTION 3—A prospect asks, "What is the *outstanding* advantage of a Hapman Tubular Conveyor?" What's your reply?

ANSWERS: 1—All now successfully handled except sticky molasses. 2—One horsepower. 3—Hard to answer. In one case, ability to convey wet material is vital; in another the Hapman's air-tight seal keeps moisture or dust out—or fumes in. Ability to curve around obstacles may be essential. Your best answer: "They cut costs!"

NOW SEND YOUR QUESTIONS!



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Write for details and Bulletin CP-553.



When inquiring check CP 1210 on handy form, pgs. 2-3

Truck, lift team keeps products moving with minimum operator effort

Uses: For general materials handling involving use of powered lift and lift truck combination.

Features: When used in combination, lift and lift truck aid progressive production by minimizing manual effort. Operator needs only to push buttons or operate pedals.

Description: Manufacturer's Working Height Lifter allows full loads on platforms or floor trucks to be deposited on it directly at floor level without further handling. Electro-hydraulically



One stroke of handle raises platform

operated, equipped with remote control footoperated switches, it can be made in any size up to 4000 lb capacity. Locking type lifting and deadman lowering controls permit accurate "inching" up or down.

In compact Master Redilift Truck, platform is raised and lowered with only one stroke of the handle. With foot-operated pedal, loads are lowered without jarring. Roller-bearing wheels and hardened axles, dual front wheels, pressure lubrication, and all parts except wheels are made of malleable iron or structural steel.

(Both units are manufactured by Lewis-Shepard Products Inc., Dept. CP, Watertown, Mass. . . . or for more information check CP 1211 on handy form, pages 2 and 3.)

Bulletin specifies advantages of welded tank cars

Twenty-four-page, 2-color bulletin describes advantages of tank cars of the all-welded design. Detailed data is given on tank cars designed to carry every type of chemical. Bulletin includes general specifications, I.C.C. specifications, and construction details, as well as numerous pictures illustrating cars and fabrication processes.

Bul 53-TC is issued by American Car and Foundry Co., Dept. CP, 30 Church St., New York 8, N. Y. When inquiring specify CP 1212 on handy form, pages 2 and 3.



Cheap Rides For Raw Materials

In thousands of plants, day after day, "PAY-LOADERS" are moving fertilizer, chemicals and all kinds of bulk materials with great savings in time and costs. Indoors and outdoors these agile tractor-shovels scoop-up, carry, unload, load, transport, stockpile, windrow and spread. They maneuver in close quarters and can travel rapidly in both directions. That's because they have ample power, short wheelbases, big pneumatic tires and multiple speeds in reverse as well as forward. "PAYLOADER" application is simple and flexible too — they can go right to work without a lot of expensive plant alteration.

It will pay you to find out how "PAYLOADERS" pay BIG on bulk-handling operations of all kinds.

There are eight models, ranging from the 12 cu. ft. size that will unload box cars, up to the big 90 HP 1½ cu. yd. Model HM... also a choice of front-wheel drive, rear-wheel drive or four-wheel drive to best fit your needs. Your "PAYLOAD-ER" Distributor, one of 200 in the U.S. and Canada, is ready to serve you right with complete parts and service departments. The Frank G. Hough Co., 744 Sunnyside Ave., Libertyville, Ill.

PREE HANDBOOK

Tells how and where to look for signs of inefficient bulk materials handling . . . how to analyze, organize and set up an efficient handling system . . . plus many useful tables and data. Write for "Bulk Materials Handbook."





SEE PAYLOADERS at the Materials Handling Exposition — Booth 1349

When inquiring check CP 1213 on handy form, pgs. 2-3

N C.

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INSTALL SYSTEM*

Actual case analyses of Tote System installations in plants handling a variety of bulk materials ranging from synthetic detergents to plastic powder, as well as such basic commodities as flour, sugar and powdered coffee, show savings on handling costs of 18 cents to 85 cents per hundredweight.

One Tote System user, handling 1,450,000 pounds of material per month, reports a saving of 30 cents per hundredweight — or a total sav-

ing of \$4,350 per month. Cost of the Tote System installation to handle this material was \$23,150. Thus, this user paid for his equipment out of savings in less than six months.

Tote System — built around easily handled aluminum bins plus automatic filling and discharging equipment—saves on container costs, labor costs, storage costs, freight claims, product loss, product contamination and deterioration, and inventory.

Tote* is equally effective for inter-plant or in-plant handling of all types of bulk materials, including liquids. One of the many and most valuable in-plant applications is the uniform, automatic blending of different batches of materials.

Tote engineers will survey YOUR plant, at no cost or obligation, to determine the savings YOU can effect.

Write for NEW Illustrated Literature

† User's name on request.
• Tote and Tote System Reg. U.S. Pat. Off









TOTE SYSTEM, INC.

680 South 7th St., BEATRICE, NEBRASKA

When inquiring check CP 1214 on handy form, pgs. 2-3

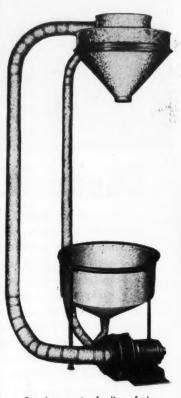
MATERIAL HANDLING

Handles plastic granules for molding machines in low space . . .

if weighing is necessary, air elevator can supply hopper

Uses: For lifting granulated plastics from the floor or other location to the hopper above the molding machine, particularly where head space is limited.

Features: Where molding machine is fed by weighed-starved feeding, unit can be used to supply hopper of the weigher. No



For close-quarter feeding of plastic molding machines

particles are left in the feeding hopper and any dust remaining in pipes is easily cleaned for color-change runs. Receiving hopper is designed to prevent flooding of the Venturi when fan is shut off, thus desired level can be maintained by means of bin level indicators.

Description: Standard size Gump Air Elevator has 1000 lb/hr capacity, but larger sizes are available. Specifications vary with individual applications.

Neff & Fry Silo System pays foundry big dividends

This system was described in THE IRON AGE. We abstract as follows:

"Installation enables one man to unload a 50-ton car of sand in an hour. Previously, sand was shovelled by hand. Took six men a full day to unload a gondola. The 16'x 50' silo holds

a 6-week supply. Sand is kept dry. Total installation cost will be repaid every three years."

Similar savings are being made in handling all kinds of flowable bulk materials through Neff & Fry Silos with suitable conveying machinery. We can cite hundreds of cases.

It will pay you to have us study your requirements. Anyway, ask for our folder, "Bins With the Strength of Pillars."

THE NEFF & FRY CO. • 166 Elm St. • Camden, Ohio

NEFF & FRY SUPER-CONCRETE STAVE STORAGE BINS

When inquiring check CP 1215 on handy form, pgs. 2-3





You may have a handling problem involving wet, dry or sticky substances from one department to another or from processing machines to ultimate packing. Screw-lift is your logical choice. It is comparable to piping, except that you are moving solids instead of a liquid. It is simple, fool-proof, economical.

This installation required the collecting of cooked cracked Soy Beans from cookers — elevating 25 feet and transferring to cross conveyor feeding into flaking

Unusual in that space was at a premium, material could not be exposed — eperation had to synchronize with other equipment and run automatically.

job fast — smooth iob fast — smooth — clean. No costly mechanisms, no degradation, no return bends, no labor required.

Use our full scale Pilot Plant for experimental runs. Write for Form M-500-2



When inquiring check CP 1216 on handy form, pgs. 2-3

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COMPLETE, MECHANICAL, AUTOMATIC SYSTEM-TOTE- A COMPLETE, MECHANICAL, AUTOMATIC SYSTEM-TOTE SYSTEM

Standard units are recommended for vertical lifts up to 20' and also for horizontal runs up to 10'. Unit includes receiving hopper, fan (direct connected to motor), air filter at intake to prevent contamination of the plastics, Venturi adjustment to regulate capacity, and necessary pipes.

An upper expansion chamber is provided, where the air is released and the plastic material is permitted to drop into the molding machine or weigher hopper. Air release is arranged for ringaround return to the fan, reducing quantity of air taken from the room to a minimum.

(Development of The B. F. Gump Co., Dept. CP, 1313 S. Cicero Ave., Chicago 50, Ill. . . or for more information check CP 1217 on handy form, pages 2 and 3.)

No banding troubles with compact unit

An attachment to standard conveyors has been devised to speed banding of cartons. Called the "Banding Helper," carton conveyor features easy passage of banding tape through under-pass and up a vertical deflector channel, and a channeled midrib to receive the lengthwise band from a separate roll placed under the conveyor.



Carton banding becomes simple job

Unit is available for any standard conveyor widths or can be made to suit other specifications.

(Development of the Metzgar Company, Dept. CP, 449 Douglas Street, N. W., Grand Rapids 4, Mich. . . . or for more information check CP 1218 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 1219
. . . see information request blank between pages 2 - 3.

FEEDING A PRODUCTION-HUNGRY PLANT WITH A

One Cubic Yard
"Spoon"

Feeding raw materials to a production-hungry plant is just one of many uses for the multi-purpose Allis-Chalmers HD-5G Tractor-Shovel. It receives bulk materials, then carries them directly to mixing hoppers, conveyors or storage as needed. In addition, this powerful crawler excavates for new construction, handles coal, cleans up and loads waste . . . also clears snow and maintains yards and parking areas.

Interchangeable attachments, such as bulldozer blades, special buckets, lift fork, crane hook and trench hoe, add still further to its usefulness.

Tractor-Shovels are also available on the three larger sizes of Allis-Chalmers crawler tractors, giving a range of standard buckets from one to four cubic yards — and up to seven cubic yards for light materials.

Let your Allis-Chalmers dealer tell you more about how you can mechanize your materials-handling the efficient tractor-shovel way.



Keeps Production Moving-Fast!

The HD-5G feeds bulk materials in exact required amounts for uniform mixture — a full cubic yard at a scoop. In handling light materials, a two cubic yard bucket doubles output. Special fast reverse greatly speeds operation on short runs. This flexible tractor starts boosting production as soon as it's put on the job . . . no waiting for costly installations or changes in plant layout when you mechanize materials handling the Allis-Chalmers tractor-shovel way.



Receives Material at Plant

The HD-5G scoops a heaping load of any material at the unloading trestle, then delivers it directly to mixing hopper, conveyor, or storage area. Truck wheels, idler and support roller bearings are positively sealed against grit and moisture and require lubrication only once every 1,000 hours. This feature alone saves about 30 minutes' greasing time a day.

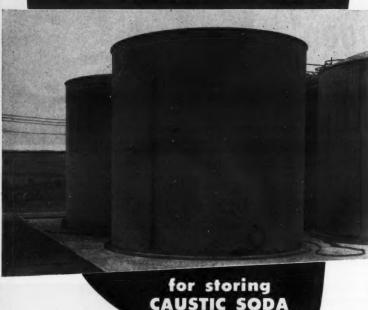


Builds Storage Piles-Anywhere

This fast-working tractor maintains large stockpiles in the open or under a protective shed. Crawler tracks provide traction and flotation to work right up on the pile, enabling it to put many more cubic yards of material into a given area. Tracks also give long life in cullet and similar material as only steel can.

ALLIS-CHALMERS
TRACTOR DIVISION - MILWAUKEE 1, U.S.A.

FIELD-ERECTED **HORTON TANKS**



The two 30-ft. diam. by 30-ft. tanks illustrated above are used to store liquid 50 per cent caustic soda at the Stauffer Chemical Company's plant at Henderson, Nevada.

The above tanks are a typical example of the type of flat-bottom field-erected steel tanks that we are equipped to build. We also fabricate and erect elevated water tanks; spherical, spheroidal, and cylindrical pressure tanks of carbon steel; and special plate structures of aluminum, stainless steel and other corrosion-resistant materials. We have facilities for pickling and painting carbon steel by the Horton phosphoric acid process and equipment for x-raying and stress-relieving. Write our nearest office for further information or quotations.

FIELD WELDING SUPERVISORY SERVICE

A Field Welding Supervisor is assigned to every structure we build to qualify welders, check equipment, inspect welding procedures, and examine plugs cut from welded joints. Specially selected and trained, he assists in every way possible to erect a structure that is above and beyond your specifications. This CB&I service, which is yours at no extra cost, assures you of the best welded steel structure your money can buy. Don't be satisfied with less.

CHICAGO BRIDGE & IRON COMPANY

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 1220 on handy form, pgs. 2-3

MATERIAL HANDLING

Compact blender plant mixes and bags alkalines . .

two-speed mixing drive ends need for holding bin

A compact blending plant, designed as a complete, ready-torun unit, has been put into operation by a San Francisco manufacturer for efficient compounding of dry alkaline and synthetic detergent products.

This unit, being used by the Ardmor Chemical Company, includes a two-speed mixing drive that eliminates the need for a holding bin and preserves the physical form of the product during bagging operations.

Features include a ½-ton skip loader, a 56-cu ft (or 42-gal) ribbon mixer with up to 2000 lb



Need for holding bin is eliminated in blending plant

capacity, a gyratory sifter for removal of oversize particles and foreign matter, and a bagging hopper and scale. Motor and drives are included.

The unit may also be utilized specifically in manufacture of laundry products, metal cleaners, scouring powders, soap builders, dairy cleaners, water treatment compounds, floor cleaners and auto cleaners as well.

(The Uni-Blender Compounding Plant used at Ardmor is a product of the A. E. Poulsen & Co., Dept. CP, 3305 E. Slauson, Los Angeles 58, Calif. . . . or for more information check CP 1221 on convenient Reader Service slip, pages 2 and 3.)



WELD-BILT HYDRAULIC LIFT TRUCK HANDLES MO WORK, EASIER FASTER.

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This is the kind of service you can expect from WELD-BILT...a thorough analysis of your problems based on years of varied experience and wide knowledge, of handling problems...then a recommended solution that will do YOU the most good — in time and labor savings, in product protection, production speed-up — at the lower cost. It may involve adapting standard equipment, custom-engineering new equipment — or merely realigning your present operations.

Call in the WELD-BILT Materials Handling Engineer for an economical solution to your problem today. You'll probably save money,

WEST BEND EQUIPMENT CORP.

332 Water St., West Bend, Wis.

MATERIALS HANDLING ENGINEERS

Portable Elevators + Pallet Trucks + Single Stroke Lift Trucks . Two-Wheel Trucks . Platform Trucks . Skid Platforms.

When inquiring check CP 1222 on handy form, pgs. 2-3



for MIXING, STIRRING, AERATING, PUMPING, etc.

Manufactured by an exclusive process, MICHIGAN propellers are perfectly balanced to avoid whip and strain on shafts. And because of their superior functioning are now standard parts of the products of many leading equipment manufacturers.

Available for special application and replacement, as well as original equipment, in a wide variety of metals and in sizes up to 60". Write for latest data

MODEL GDA - MIXER INTERNATIONAL ENGINEERING

When inquiring check CP 1223 on handy form, pgs. 2-3

Oils, saits, fats won't damage Neoprene-rubber tires for trucks . . .

AULIC

rest manved \$90,-1 ipment because a Weldrestriction ding on specialsolve a st-saving uipment

Perience omended d labor e lower ineering

an eco-

RP.

MIXE

SING

wheel and tire also withstand daily steam cleaning with detergent

Cushioned tread of tough, durable Neoprene is bonded to a hard rubber-fiber core so that tire remains inert to animal fats, oils, grease, fatty acids, salt, and other chemicals.

Tire will not soften when in contact with hot surfaces. Under these conditions, treads harden gradually, but retain their resistance to abrasion, manufacturer reports.

Special anti-friction bearings are sealed against moisture and dirt and have adjustable bearing housing to compensate for wear. Cast iron hubs can be replaced with aluminum to eliminate possible dangers of sparking.

(Neoprene material is a product of E. I. du Pont de Nemours & Co., Inc., Rubber Chemicals Div., Wilmington, Del. Fabricator of tire and manufacturer of wheel is St. John & Co., Dept. CP, 5800 S. Damen Ave., Chicago 36, Ill. . . . or for more information check CP 1224 on handy form, pages 2 and 3.)

Offers useful data on screw conveyors

Comprehensive information on screw conveyors and screw feeders is provided in 92-page book. Screw conveyor is said to be one of the most versatile of conveying mediums, as shown by wide assortment of materials handled — light, heavy, fine, coarse, granular, flaky, sluggish, free-flowing. One table in book lists 250 materials — food stuffs, minerals, and chemicals of all kinds — classifying them by size, flowability, abrasiveness, average weight, and other types of physical characteristics.

Book gives detailed engineering information, with selection tables and horsepower formulas, layouts and arrangements, dimensional data and part numbers, to permit selection of screw conveyors and screw feeders for many types of applications.

In addition to helicoid flight and sectional flight conveyor screws used in the majority of installations, book shows many other types such as the cut flight conveyor screw for mixing light granular or flaky materials; riboon flight for sticky, gummy, or viscous substances; paddle conveyor screw for mixing, stirring, or blending; and screws with tapered flight, double flight, short pitch, long pitch, and others — all designed for special conditions.

Conveyor troughs described include: drop-bottom troughs (for quick cleaning), jacketed troughs (for heating, drying, and cooling), dust-sealed troughs, flared troughs, and cast troughs. Engineering data and component specifications on troughs and screws are all included in book.

Book No. 2289 is issued on letterhead request to Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill.



This BAKER TRUCK handles <u>any</u> shape load ...

and stacks it in any position!

You name the load—the Baker "Octopus" illustrated will handle it, whether it's a drum, a roll of newsprint, a packing case, a piece of machinery, a bale of cotton or a pallet load of cartons. Moreover, it will pick it up, transport it, raise or lower it, shift it to left or right, revolve it, up-end it, or stack it in any position. In fact, it will handle it with no more physical effort than is needed to operate the simple hydraulic controls.

The "Octopus" consists of a standard Baker Fork Truck equipped with a variety of Baker attachments—360° revolving head, 4-purpose carriage, up-ender, drum clamp, etc.—which may be applied individually or in combinations. While one truck may never be called on to perform all these functions, the "Octopus" demonstrates the range of utility of Baker fork trucks and attachments.



write for 6-page special report on the application of Baker attachments to various loads.

THE BAKER-RAULANG COMPANY
1210 WEST 80th STREET + CLEVELAND 2, OHIO

BAKER-LULL Corporation, Subsidiary, Minneapolis, Minn.

Material Handling and Construction Equipment.

When inquiring check CP 1225 on handy form, pgs. 2-3



Two Completely NEW Lift Trucks!



THE UC-30

THE

STREAMLINED AND FUNCTIONALLY DESIGNED FOR UNEQUALED PERFORMANCE IN CAR LOADING, WARE-HOUSE AND ALL OTHER CLOSE-QUARTER OPERATIONS

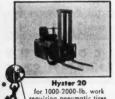
Hyster now offers, in addition to the where it is not necessary to use pneupneumatic-tired 4000-lb. YT-40 Lift Truck, a new lift truck in the 3000-4000-lb. class—designed specifically for close-quarter operation!

The new Hyster YC-40 is smaller than the pneumatic-tired YT-40 because it is functionally designed to more compact dimensions, utilizing smaller cushion tires. The YC-40 is recommended for those applications matic tires.

The new Hyster UC-30 is basically a YC-40 Lift Truck with a lighter counterweight, but with the same engine. Both incorporate advanced features not found in any other lift truck today! Call your Hyster dealer, or write for Catalog 1241 to:

HYSTER COMPANY

Be Sure to Call HYSTER Before You Buy ANY Lift Truck!



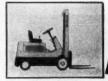
HYSTER COMPANY



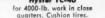
Hyster UC-30



Hyster YT-40 for 4000-lb. work requiring



Hyster YC-40



FOUR FACTORIES: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands

When inquiring check CP 1226 on handy form, pgs. 2-3

MATERIAL HANDLING

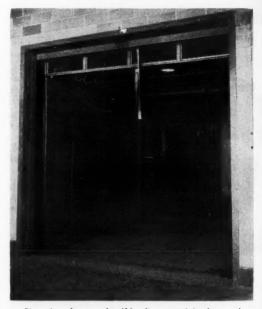
Vat dye production gets started with vertical elevators, gravity takes over . . .

> no attendant needed for inter-floor transit. dumbwaiters run errands to and from lab

At the new Ciba States Ltd. 1200-acre plant at Tom's River, N.J., which recently began production of vat dyes, in contrast to the usual practice of erecting a single-story building over a large area, principal production facilities are contained in three separate buildings. The center building is five stories high, the other two are four storied structures, and all buildings are connected by a bridge at the third floor

Use of multi-storied buildings was dictated, in part, by the large chemical equipment extending more than one floor in height. Another reason is that by efficient use of vertical transportation equipment, the force of gravity can be employed cheaply to convey products through the plant.

Each of the three production buildings is equipped with a large Otis freight elevator. Incoming raw materials in drums, barrels, bags, carboys, etc., are taken by elevator to the top of the building. From there on, flow is by gravity through pipes.



Bi-parting doors and self-leveling speed loading and unloading of freight elevator

The freight elevators are usually operated without attendant. Bi-parting doors speed loading and unloading. Automatic leveling at each floor also makes for faster service and greater safety.

The elevator cars have doors at each end, although not all floors have doors on opposite sides of the hoistway. The elevators were one of the first units to be placed into service and have been useful in transporting heavy machinery during construction.

The center building has facilities for a second

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elevator in the future with hoistway doors, guide rails and all auxiliary equipment. When expanded production warrants it, the elevator car and equipment can be quickly installed. Also in the center building, an Otis automatic stain-

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Dumbwaiter serves control lab on fifth floor

less steel dumbwaiter runs from the first to the fifth floor which is fully occupied by the control laboratory. Since production of vat dyes requires close control and constant testing, the dumbwaiter is especially convenient for production supervisors sending samples quickly and easily to the lab.

The final results, either the test sample itself, or a written message, can be quickly returned to the production personnel on the proper floor.

(Elevators used at the Ciba plant are products of the Otis Elevator Co., Dept. CP, 260 11th Ave., New York 1, N.Y. . . . or for more information check CP 1227 on convenient Reader Service slip, pages two and three.)

Pictures bag handling cycle, from receiving operation through shipping

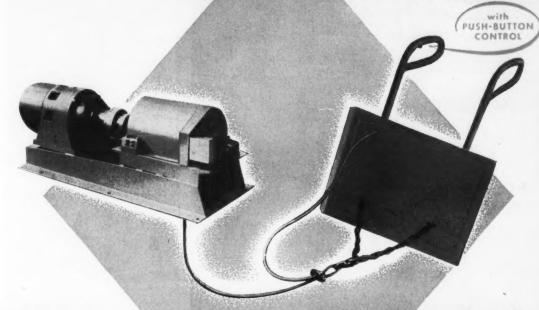
Colorful, 8-page booklet describes and pictures bag handling cycle in plant or warehouse from receiving, through processing and shipping. More than two dozen photos show various methods of handling by fork and platform truck, plus the use of many specialized attachments designed to increase handling versatility. Wide variety of bagged products is used for illustrative purposes.

Such operations as unloading, stacking within a building, inter-departmental and inter-building moves, handling at processing stations, and shipping are detailed.

Advantages claimed for load unit handling of bags include: greater speed of transportation; multiplied use of floor and vertical areas; increased safety for operators and other employes; full protection for in-transit, stored, and adjacent materials; reduced physical effort; and increased operating efficiency. Booklet also lists suggestions for planning flow of bagged goods, for obtaining more effective storage practices, and for effecting other economies in bag handling practices.

Booklet "The Logistics of Bags" is available from The Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio. When inquiring specify CP 1228 on convenient Reader Service slip, pages two and three.

FLASH! .. Here's a SCOOP AND IT'S FULLY AUTOMATIC



The leffrey B

The Jeffrey Power Scoop is shown above—cable reel directdriven from motor and reducer, all mounted on substantial base. Drawing shows material being moved to the car door for discharging into hopper—or chutes, elevators or conveyors. Positive control and safe operation are features of this NEW Jeffrey Automatic Power Scoop. Used for unloading bulk material from box cars, this SCOOP is fully automatic, light in weight, and can be moved backward and forward at will before moving the material to the door for discharging. An electric push button in the handle makes operation easy. When pulling Scoop back, cable is unreeled only to required length—no slack to interfere. One man can do the work. Write for additional information.

TEFFR

IF IT'S MINED, PROCESSED OR MOVED
...IT'S A JOB FOR JEFFREY!

MANUFACTURING CO.

Columbus 16, Ohio

sales offices and distributors in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA.

When inquiring check CP 1229 on handy form, pgs. 2-3



How to boost your stock ...with the boss

You can cut materials handling time up to 50% and more all along the line—from receiving, clear through to shipping—with TOWMOTOR! Many users have more than doubled storage space. And only TOWMOTOR gives you TowmoTorque, the amazing new drive that eliminates clutching and gear-shifting. Plus effortless TOWMOTOR Power Steering! Plus revolutionary new Diesels with Cushioned Power! Plus time-tested Preventive Maintenance! Send for booklet describing TowmoTorque and Power Steering. TOWMOTOR CORPORATION, Div. 2305, 1226 E. 152nd St., Cleveland, Ohio.



FORK LIFT TRUCKS AND TRACTORS

Since 1919

TOWMOTOR ENGINEERED FOR QUALITY PERFORMANCE

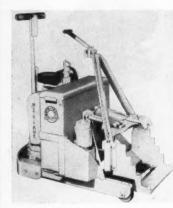
When inquiring check CP 1230 on handy form, pgs. 2-3

MATERIAL HANDLING

Clamp on tractor grips onto all trailers and hitches

Uses: For moving four-wheel trailers or containers. With clamp, tractor can grip all types of trailers and hitches.

Features: Clamping and release mechanism is completely hydraulic. The lower "toothed" clamp can be adjusted in or out



Uses electric-hydraulic clamping design for hitches

depending on the position and height of the container or hitch, upper clamp comes down, and the grip is closed.

Description: "Grip-All" Tractor is made with either a 12 or 18 v battery; overall dimensions of unit are 27 x 48". Drawbar pull is approximately 700 lb. Tractor is equipped with heavyduty power drive and roller grip controls.

(Development of The Moto-Truc Co., Dept. CP, 1948 E. 59th St., Cleveland 3, Ohio . . . or reader may secure more information by simply checking CP 1231 on convenient Reader Service slip pages two and three.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

Dilpaco STAINLESS STEE TANKS

Designed and fabricated to your specifications . . . all shapes and sizes up to 2000 gal. capacity.

Accessories: Agitators, gauges, special covers, special fittings, cooling and heating coils.

Over 15 years' experience and latest fabricating equipment assures you of the right tank for the job.



Write us today concerning your problems
Your inquiries will receive immediate and
personal attention by our engineers.

We also manufacture

We also manufacture equipment for filtering, filling, mixing, conveying; as well as Filter Paper, Filter cloths and bags.





FILPACO INDUSTRIES The FILTER PAPER CO.

2432 S. Michigan Ave.

Chicago 16, Ill.

When inquiring check CP 1232 on handy form, pgs. 2-3



Easily and Safely



Universal Drum Upending Bar works on lever principle... requires only 135 lbs. to raise a 450 lb. drum. An average man now does the work of the strongest man.

The Bar is made of 1" solid steel...cannot bend or break regardless of drum weight. It hooks firmly under and over the lip of the drum...the greater the load the tighter it grips.

Drum can't revolve during upending, nor "break away" to cause damage and injuries. The 33" long Bar keeps the man safely away from drum during upending.

Write for complete details. \$9.75 each, f. o. b. Los Angeles.



me Territories Still Available for Distributors

MELOOZ, Inc.

8018 SOUTH MAIN ST., LOS ANGELES 3, CALIFORNIA

When inquiring check CP 1233 on handy form, pgs. 2-3

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Bulle Dept Dept Mich

MATERIALS

MAY, 1

Sure, steady control of loads and without swing or sway assured by crane . . .

NDARD

hoisting ropes form triangular suspension to hold objects rigid while in transit

Uses: For hoisting and transporting operations from one area to another, such as anodizing, chromodizing, and similar plating operations.

Features: Where stabilized crane is used for tank dipping (plating operations) elimination of load swing and sway gives added speed. Unit



No swing, no sway

also aids in various assembly operations since parts or assemblies being worked on can be held solidly in position. No-swing feature is also advantageous for supporting traveling X-ray equipment.

Description: Tramrail crane has a simple arrangement of hoisting ropes which form a triangular suspension. This permits load to be held rigidly in place so as to eliminate longitudinal, lateral, and rotational sway. Thus, a load can be raised or lowered through a considerable distance with nothing more than the hoisting ropes supporting it, and will remain as rigid as if guided in an elevator shaft, manufacturer reports.

(Development of the Cleveland Tramrail Div., The Cleveland Crane & Engineering Co., Dept. CP, Wickliffe, Ohio . . . or for more information check CP 1234 on handy form, pages 2 and 3.)

Uses and features of belt conveyor told

Four-page, 2-color bulletin reports on uses and features of heavy duty power belt conveyor. Designed for inclined or horizontal operation, conveyor — called the Floor-Veyor — is pre-engineered and permanently mounted.

Bulletin is illustrated with pictures, charts, and tables. Specifications are listed and sketches are used to show recommended installation procedures.

Bulletin on Floor-Veyor belt conveyor is issued by Dept. FV-53, The Rapids-Standard Co., Inc., Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. When inquiring specify CP 1235 on handy form, pages 2 and 3.



The name of Mennen stands for quality. So does the trade name MIKRO. It was only logical then, that the two should inspire the creation of a continuous processing system unique in the field of cosmetics, at the new Mennen plant in Morris Township, N. J. The MIKRO-designed process gave Mennen precisely what they wanted—extreme cleanliness and freedom from dust and contamination in grinding, blending and packaging. Material is moved through the MIKRO Air Conveying System so smoothly and automatically that the human hand need only push buttons.

The grinding and blending is done by four No. 2TH MIKRO-PULVERIZERS whose product reveals its finely ground and blended texture under a strong microscope.

Two MIKRO-COLLECTORS*, each containing 8, felt filter cylinders vent every unit in the system, while maintaining uniform pressure. Their phenomenal filter rates insure high capacity and complete product recovery, along with freedom from dust.

Thus the MIKRO method has given The Mennen Company not only the high quality they demand but peak production with economy in manpower, motorpower and maintenance.

WRITE FOR illustrated descriptive literature.

* Patents Applied For by H. J. Hersey, Jr. and Pulverizing Machinery Company

PULVERIZING MACHINERY COMPANY

60 Chatham Road

Summit, New Jersey

PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE

MKRO-PULTINE ZER
AT QUIRA FINE ER
REG. U.S. PAT. OFF.
COLOR PERCENTOR

When inquiring check CP 1236 on handy form, pgs. 2-3

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Declining profit margins are the result of several things but from a production standpoint very substantial progress in reduction of overhead can and is being made. Two major conditions should be attacked for solution of this problem. They are (1) eliminating overweight packages thereby saving production costs from bulk through the packaging operation (2) preventing underweight containers which bring on confiscated or returned products, an expense most adverse to favorable profit margins. The answer is better cost control with the right weighing equipment in the right place. This defeats your enemy "Packaging Leak". Better and better cost control is being accomplished every day with all types of **EXACT WEIGHT Scales, today's leading** checkweighing units. Why don't you write for details for your operations.

Sales Service from Coast

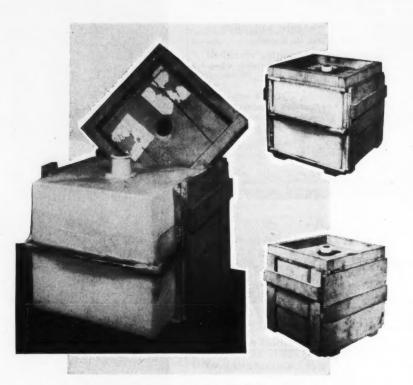
EXACT WEIGHT SCALES

BETTER QUALITY CONTROL BETTER COST CONTROL

THE EXACT WEIGHT SCALE COMPANY

904 W. Fifth Ave., Columbus 8, Ohio 2920 Bloor St., W, Toronto 18, Canada

When inquiring check CP 1237 on handy form, pgs. 2-3



Illustrations show all-polyethylene 15-gallon shipping container in various stages of assembly

Light weight and square shape of plastic carboy means more payload per cu ft in shipping

Polyethylene carboy with ICC Classification 1G for shipping (or holding) aqueous solutions of corrosive materials, some of which are:

Acetic anhydride Acetic acid, glacial Acetic acid, 56-84-90% Ammonium hydroxide, 28% Ammonium hydroxide, 10% Bleaching solutions Caustic soda, 50%* Caustic soda, 10%* Caustic potash* Calcium chloride solutions Dimethyl phthalate Ethylene glycol Ferric sulfate solution

Ferric chloride solution Hydrofluoric acid, 28% Hydrogen peroxide, under 8% Hydrogen peroxide, 8-37%* Methanol* Muriatic acid, 22° Be Muriatic acid, 10% Nitric acid 10% Phosphoric acid, all strengths Plating solutions Sulfuric acid, 60% & lower* Sugar syrups

*Are regulated by ICC and permit must be obtained before shipping.

Handles anything polyethylene will handle; has half the weight and twice life expectancy of glass types

Not recommended for petroleum and aromatic solvents, chlorinated organic solvents, or sulfuric acid higher than 60% or nitric acid higher than 10%.

Features: Square shape of the Karbox container offers more payload per cubic foot than can be attained with conventional round-shaped containers. Weighing approximately 37 pounds, it is about half the weight of ordinary carboys — thus cutting shipping costs and making it easier to handle.

The polyethylene inner container has passed the "Drop test" — pointing to its unbreakable properties.

to

Coast

Life expectancy has been estimated to be 12-14 trips, in contrast to 7 trips at most usually expected from glass carboys.

Chemical resistance is inherent in polyethylene itself. Where any doubt exists, a strip of polyethylene can be tested in the material in question. Manufacturer of the Karbox is willing to assist with such testing.

Description: Karbox carboy has a 15 gallon shipping capacity and consists of two halves—top and bottom— of injection molded polyethylene. Halves are flanged and bolted together with a steel reinforcing strip. A polyethylene film is welded over the flanged area to seal out corrosives. (Manufacturer is currently experimenting with a 100% plastic flanged design.) Walls are ½ thick and overall dimensions are 20" high x 17½" x 17½.

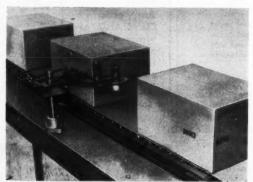
A reversible polyethylene pouring spout is part of the carboy. The spout is turned into the neck for shipment, and turned out for pouring. A polyethylene plug with a porous carbon breather disk is available.

(Karbox is a product of the Tennessee Products & Chemical Corporation, Dept. CP, First American National Bank Building, Nashville 3, Tenn. . . . or for more information reader may simply check CP 1238 on handy Reader Service slip between pages two and three.)

Front and side of shipping cases are code-dated simultaneously with marking device . . .

makes identification easier when containers are stacked or palletized

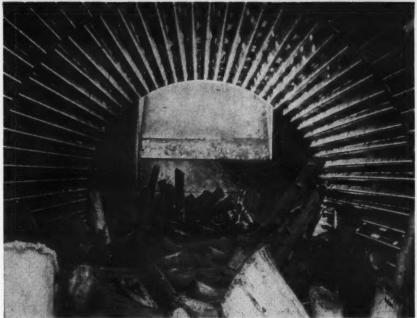
Both front and side of shipping cases can be marked simultaneously with code-dates, lot numbers, or other identification by means of friction-operated automatic device. Marks are imprinted on both surfaces of containers as they move along a conveyor line,



Marking machine automatically re-positions itself after each imprinting

through a sealer, or in some other production operation. Marking of cases on two different panels facilitates identification when stacked or palletized.

(Continued on next page)



A trip through the barking drums is the first step for this southern pine, on its way to becoming pulp at Hudson's giant Florida Multiwall Sack mill. Logs are tumbled until stripped of all bark.

Wood is next reduced to chips like these. Whirling knives dayour a 5-foot log in 10

Wood is next reduced to chips like these. Whirling knives devour a 5-foot log in 10 seconds. The mill consumes 700 cords of pine daily.



Digesters 5-story high cook the chips under pressure in a scalding chemical solution. This reduces the wood to pulp.

Here is why HUDSON can guarantee Multiwall Sacks against breaking on the packer

REASON NUMBER 2

HUDSON MAKES ITS OWN PULP

Wood pulp makes up 96 percent of the raw materials for your Multiwall Sacks. By growing its own wood, and manufacturing its own pulp, Hudson exerts ironclad control of Multiwall Sack quality and delivery schedules. This is another reason why Hudson guarantees to replace without cost all Hudson Multiwall Sacks that fail on your packing or closing machines.



After the pulp is washed, beaten, and screened, it looks like this. Note long fibers that give added toughness to Hudson Multiwall kraft.



SEND TODAY: How to store your sacks

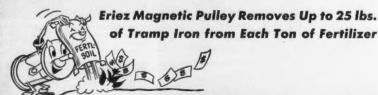
for maximum performance
Profusely illustrated folder shows you
the scientific way to store your sacks.
Step by step procedures that improve
the performance of your sacks by
up-to-minute storage methods.
No obligation.

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CITY			ZONE	STAT	E

When inquiring check CP 1239 on handy form, pgs. 2-3

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"WE SAVED \$5200 LAST YEAR BY ELIMINATING TRAMP IRON"



"An Eriez Magnetic Pulley, installed on a conveyor belt ahead of our milling and grinding equipment last year saved our company over \$5200," reports James Smith, of the Fertl-Soil Company, Rahway, N. J. "By removing 25 pounds of nails, small bolts, nuts and other tramp iron (see insert) "from each ton of fertilizer being processed, the Pulley saved over \$1000 in preventing machinery damage, and saved \$4200 in downtime! Customer goodwill has also been greatly strengthened because we know that our fertilizer is delivered free of all tramp iron. Our company used mechanical separating devices in the past, but the Eriez Pulley has proved to be the most positive and satisfactory means of eliminating ferrous contamination from our products.



Eriez Magnetic Pulley attracts, holds and automatically removes tramp iron from belt-conveyed material. Non-magnetic material falls free by gravity at its natural tangent point. Iron and steel, however, are held firm until carried out of the pulley's magnetic field beyond a divider where they fall off the belt into a container.

Only the ERIEZ Line of Patented Pulleys has ALL These Features:

- 1. New Indiana Hyflux Alnico V gives Eriez pulleys more pulling power than ever before.
- 2. Stressed skin construction assures greater durability in service.
- 3. No heavy internal spokes, cast iron, etc., to increase weight and bleed away strength.
- 4. End caps and internal supporting structure are non-magnetic . . . ferrous particles can't collect to cause bearing wear.
- 5. 68 standard sizes with capacities from 250 to 18,600 cu. ft. per hour are available for quick delivery.



Write for FREE 16-page Catalog 15 which describes 25 different Magnetic Separators for the



MANUFACTURING COMPANY

13 Magnet Drive . Erie, Pennsylvania

"Buy Permanent Protection . . . by ERIEZ"

When inquiring check CP 1240 on handy form, pgs. 2-3

PACKAGING

(Continued from preceding page)

Machine automatically re-positions itself after each imprinting so that marks on successive cases all appear in identical locations. Marks may consist of one line of copy containing up to eight letters or figures in bold 1/2" type. Copy changes can be made in a matter of minutes. Machine's visible ink reservoir has a capacity sufficient for more than eight hours of continuous operation.

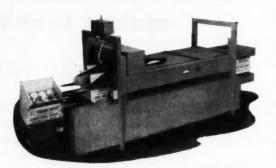
(Rolacoder 500 Imprinter is manufactured by Adolph Gottscho, Inc., Dept. CP, Hillside 5, N. J. or for more information check CP 1241 on handy form, pages 2 and 3.)

Requires 1/3 less glue to seal cases when spot-applied . . .

short gluer-sealer needs less than 30 sq ft floor area, handles cases to 24" long

Applies glue and seals all types of paper cases. Adjustment time to change from one size case to another is about five minutes.

Features: This short case sealer applies glue in spot patterns for fast drying, using 1/3 to 1/2 less glue than pot and roll applicators. Built to handle eight-12" long cases/min or four-24" long cases/ min. Unit occupies less than 30 sq ft of floor space. Manufacturer claims it has fewer moving parts than any commercial sealing equipment.

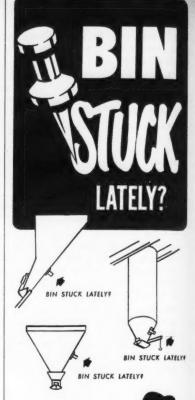


To operate, the carton is moved into this short sealer contacting the switch to start motor and flight chain. Carton is conveyed through gluing, folding, and into compression unit, whereupon the machine automatically stops, ready to repeat cycle

Description: Measurements of semi-automatic gluer-sealer are about 33" wide, 9' 9" long, and 5' high. Weighing only 1150 lb, it can be made portable by mounting on casters. It will handle container sizes to 24" long x 16" wide x 18" high, sealing both top and bottom flaps.

By applying glue to the outer case flaps in spots at 3/4" centers, each spot has the advantage of being aerated around its entire circumference. This system allows the glue to spread and be absorbed faster than when applied in an all-over design.

(Packomatic Packer-Gluer is being built by J. L. Ferguson Co., Dept CP, 1 Republic Ave., Joliet, Illinois . . . or for more information check CP 1242 on handy form, pgs. 2 & 3.)



Is your production slowed down by troublesome arching, bridging and sticking of dry materials in bins and hoppers? Relax! Just order a

CLEVELAND vibrator to eliminate the trouble instantly and economically.

Both quiet air conditioned and standard metallic impact types.

VIBRATOR



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 1243 on handy form, pgs. 2-3

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Over-under arrangement on scale speeds packaging . . .

shock absorbers cushion drop of packages

Pointer on scale immediately shows whether package is over or under desired weight, speeding the weighing operation. A special dashpot prevents the pointer from swinging back and forth. Another advantage is the built-in



Dial of scale is visible to operator above high backed plate

ATELYS

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shock absorbers which prolong the scale life by cushioning the drop of packages. This prevents transmission of shock to the indicator. Scale is proportioned so that it accommodates bulky packages easily and quickly.

Dial is clearly visible to operator at all times, being located above the high-backed commodity plate. Base and tower are aluminum, making it light and strong.

Model No. 1C-90-06, with high back plate, is available in capacities of 10, 15, and 20 lb. Dimensions of scale are $26\frac{1}{4}$ " length, 25" height, and $11\frac{3}{4}$ " width. Plate is 10 x 9 x 14".

Model 1C-90-05, with low back plate, has same capacities and dimensions, except that plate measures 10 x 10 x 2".

(Detecto-Gram Scale is product of Detecto Scales, Inc., Dept. CP, Park Ave., Brooklyn, N. Y. . . . check CP 1244, pgs. 2 & 3.)

For more information on product at right, specify CP 1245
... see information request blank between pages 2 - 3.





The toughest three-letter word in business

"But"

The word a man uses when he starts by nodding yes and ends by saying no.

"But . . . "

The word on a Multiwall buyer's tongue just after he's said, "Well, as long as we order by specification, I guess one brand's as good as another..."

Executives who purchase more than 85 per cent of all Multiwalls have a big BUT there.

They testify* that there are many other considerations. Among the most important, the reputation of the manu-

facturer. They judge him by his record of reliability, his effort to meet delivery dates, his willingness to give a full measure of service.

We welcome the challenge of the toughest three-letter word in business. We believe the attention big buyers of Multiwalls pay to the *extra* factors—dependability, for instance—has a lot to do with their giving Union a greater proportion of their Multiwall business.

More so every day . . .



IT'S UNION FOR MULTIWALLS

*August, 1951 research study.

UNION BAG & PAPER CORPORATION . NEW YORK: WOOLWORTH BUILDING . CHICAGO: DAILY NEWS BUILDING

Big baskets mean fewer clean-outs



• Each basket gives a ratio of straining area to inlet area of 5 to 1, affording a reserve capacity for arrested debris that permits of long operating periods without dumping. Even then the clean-out need not be immediate as the alternate basket will take up the straining load at the turn of a couple of valve handles. Note that the top of the basket is open, greatly facilitating dumping. When in the straining chamber, the basket drops just far enough, on a set-screw adjustment, to permit the strainer top to effectually close the basket top

DOORS ARE OF HEAVY STEEL PLATE, crack-proof even under most unusual stress. No need to worry when turning down the holding nuts to insure uniform stress all around. The nuts are never removed from the studs as backing them off a turn or two relieves tension on the "S" shaped washers, which can then be slipped aside to permit raising of the door.

Elliott Twin Strainers are used in practically every industry where liquids are involved. Types for high and low pressure. Sizes 4 in. to 24 in. Bulletin A-13 has complete data. Ask your local Elliott representative or write Elliott Company, Jeannette, Pa.



ELLIOTT Company

Accessories Dept.



When inquiring check CP 1246 on handy form, pgs. 2-3

PACKAGING

Accuracy of scales preserved by use of seal . . .

eliminates foreign matter and corrosion

Field tests indicate that the accurate life of standard brands of scales has been preserved for more than five years without maintenance by use of a liquid seal. Device, which fits over standard models of weighing scales, is said to protect them completely from foreign matter and corrosion under severe industrial conditions.

Feature of the device is the liquid seal. Sealing flange is fixed continuously around the underside of the moving platform, effecting an air-tight seal. Flange is at all times protruding into the liquid channel, irrespective of the weight applied to the scales, and is always free from contact with anything except the liquid. In this way pivots, knife-edges, and bearings are protected from outside conditions.

Column and head of scales are also completely enclosed. An access door and windows provide a means for making weight settings and readings. Entire device is designed as a "take down" model to permit inspection of scales as required by some state laws. Scale seal can be used for practically any model of weighing scale, including various indicators.

(Cunningham Scale Seal is manufactured by Applied Engineering Co., Dept. CP, Orangeburg, S. C. . . or for more information check CP 1247 on handy form, pages 2 and 3.)

Up to 30% space saved by bag flattener . . .

reduces damage in transit, increases pallet loads

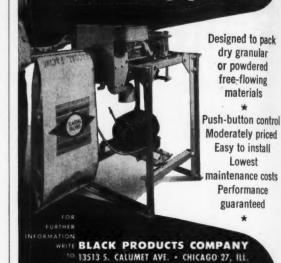
Machine is now being Uses: used in industries processing alfalfa, flour, talc, carbon black, koalin, starch, vinyl resins, fertilizer, magnesium, lime, and other chemical products.

Unit is reported to save up to 30% in warehouse and shipping space. It reduces damage in transit and increases pallet loads. Neat, clean bags are formed that are easy to handle.

Bag flattener is Description: a self-contained unit, delivered

Investigate the 1953 BLACK DIAMOND AUTOMATIC

valve bag packer



When inquiring check CP 1248 on handy form; pgs. 2-3

MANUFACTURERS SINCE 1912

Preventive painting cuts costs -



CORROSION, too

Application of Ucilon* Protective Coatings to plant structures and equipment is the secret of effective preventive maintenance in many plants. Systems of Ucilon Coatings do the job especially well for two



First, the Systems don't overlook

proper surface preparation and priming as required. This assures adhesion of top coats and resistance to undercutting. Second, Ucilon Coatings strongly resist acids, alkalies, alcohols, oils, petroleum products, moisture, salt solutions and many other chemicals and corrosives. Coatings include vinyl, phenolic, chlorinated rubber and fish oil types.

As a result, Systems of Ucilon Coatings have been successful not only in preventing corrosion but also in lengthening intervals between paintings. Concise data given in Bulletin MC-6 - write for it.

UCILON Protective Coatings

One Group of the Many UNICHROM! COATINGS FOR METALS UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N. Y. Detroit 20, Mich.-Waterbury 20, Conn.-Chicago 4, III.-Los Angeles 13, Cal. In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 1249 on handy form, pgs. 2-3

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ready to plug in and go to work. During operation, burlap or paper bags are carried between two power-driven conveyors consisting of endless steel springs moving over grooved rollers.



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17, N. Y. 13, Cal.

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Flattener forms neat bags that are easy to handle

Leveling action takes place, creating a uniform thickness throughout the bag as it passes between the staggered upper and lower rollers. Flattener is portable. It can be placed at packers or at end of conveyor. Dimensions are 31/2' wide by 91/2' long.

(Product of Power-Curve Conveyor Co., Dept. CP, Box 1146, Denver, Colo. . . . or for more information check CP 1250 on handy Reader Service slip between pages 2 and 3.)

Better protection provided by three-point bond of paint can lids

A 50% increase in protection is furnished by paint can lids which bind metal to metal at three points instead of the usual two, according to manufacturer. In this way more guard points are supplied against oxidation and formation of wasteful paint skin.

(Tripletite lids and paint cans are product of Continental Can Co., Dept. CP, 100 E. 42nd St., New York 17, N. Y. . . . or for more information check CP 1251 on handy Reader Service slip between pages 2 and 3.)

For more information on product at right, specify CP 1252
. . . see information request blank between pages 2 - 3.





BAGPAK DIVISION

SAFER WAY TO TRANSFER INFLAMMABLE FLUIDS



Drums are placed on sides in special racks or supports, have molasses valves or spigots. Pails, troughs, or makeshift drain receptacles catch seepage. Disadvantages: "bad housekeeping" from dripping or leaking valves, danger of flash fires, maximum floor space needed, chances of injury in awkward drum handling positions.



Drums stand upright. Lightweight, economical, air-operated Fast-Flo pump dispenses any amount required. Advantages: no waste, no spilling, fire hazard min-imized, less floor space required, no special racks, drums in safest position for injury-free handling.



Try this GRACO safety system in your own plant. The durable Fast-Flo pump provides double-action high-volume delivery with no pressurizing of drums. For example, it handles 18 gallons per minute of No. 20 oil. Full-size drums can be emptied in 3 minutes. One man sets up the 13-pound Fast-Flo easily. Pump is simply, strongly constructed for long service. Built to resist deterioration, delivers fluids cleaner. Fast-Flo handles most light fluids, will pay for itself quickly.

SEND FOR THIS NEW DRUM PUMP IDEA BOOK

and how this pump can save you time and money. Write for your copy now!



GRAY COMPANY, INC., 52 Graco Square, Minneapolis 13, Minnesota

Regional Offices: New York, Philadelphia, Chicago, Detroit, San Francisco, Atlanta

When inquiring check CP 1253 on handy form, pgs. 2-3

PACKAGING

High gloss quality ink specially designed for cellophane

For printing on all makes Uses: of moisture proof heat-sealing, moistureproof anchor-coated, and semimoisture proof anchor-coated cellophane whenever gloss printing is desired but reverse printing is impractical.

Features: Exceptionally glossy finish is possible with flexographic ink that does not block at 130°F and 90 per cent humidity. Manufacturer reports it gives up to 25 per cent more mileage per pound of ink than conventional cellophane inks usually give.

Description: Excellobrite is a fast-drying 100 per cent pigmented ink that does not bleed in film plasticizers.

The ink is made in a full range of standard colors and is specially formulated to run at user's regular press speeds on any type of flexographic press. However, the company points out that the ink should be used only on the specified coated types of cellophane for which it is made, and not on plain trans-parent or specialty films of the saran-coated type.

(Development of Bensing Bros. & Deeney, Dept. CP, 3301 Hunting Park Ave., Philadelphia 29, Pa. . . or for more information check CP 1254 on form, pages 2 and 3.)

Uses of weather-resistant packaging tape

Four-page, 2-color bulletin outlines uses for two types of weather-resistant packaging tape. One of these tapes is also a non-staining type. Sealing and construction requirements for boxes, as well as packing requirements are included in folder.

An interesting feature is the formula presented which determines the amount of tape required for certain sizes of containers to meet necessary shipping specifications.

High Tensile packaging guide is issued by Kendall Co., Polyken Industrial Adhesive Tape Dept., Bauer & Black Div., Dept. CP, 222 W. Adams St., Chicago 6, III. When inquiring specify CP 1255 on handy form, pages 2 and 3.



"Metalsmiths" Durable, Welded Stainless Steel STOCK POTS

Other stainless utonsils

Pails, measures, dippers, funnels, scoops, ladles, dye and starch buckets, shovels, beakers, batch cans,

Prompt Shipment

Solid stainless steel thruout

"Metalsmiths" Stock Pots are made of heavy gauge, butt welded by the wired edge on top for inheliarc process. smooth. creased rigidity. Fixed handles, rounded corner at bottom, free from crevices and wrinkles. Available polished or unpolished, with or without cover. 5 to 50 gal. sizes in stock—special sizes to order. Also available in 18-8 SMO Stainless. Let us quote on your needs for prompt

WRITE FOR LATEST CATALOG - PRICE LIST

When inquiring check CP 1256 on handy form, pgs. 2-3



AIR VIBRATORS

Don't let arching, bridging and clogging bottleneck your production . . . keep materials flowing from bins, hoppers and chutes with \$PO air vibrators. These low-cost units deliver powerful hammer-like blows which eliminate jamming of powdered and granular materials.

Exclusive feature of SPO air vibrators is a special corrosion-proof bronze alloy cylinder liner which assures full-power start, high-speed operation, low air consumption and maximum service life.



SPO INCORPORATED

6531 GRAND DIVISION AVE. . CLEVELAND 25, OHIO

When inquiring check CP 1257 on handy form, pgs. 2-3

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Automatically caps and seals 20 to 60 pints or quarts per minute . . .

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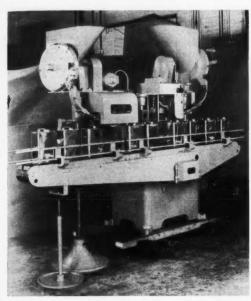
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machine is easily adjusted for changing from one size cap to another

From 20 to 60 pints or quarts per minute can be capped and sealed by machine which was unveiled at the Packaging Exposition which opened on April 20 in Chicago. Unit can handle 20 to 25 one and



Closures, which can now be placed on containers by automatic capping and sealing machine, give a positive seal, even with frequent opening and closing

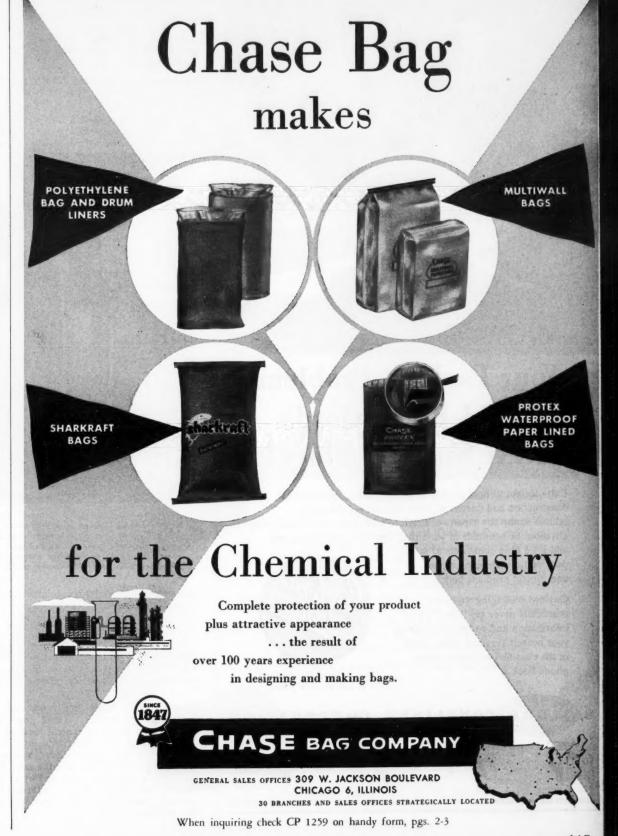
two gallon containers per minute. Another advantage of the machine is the ease with which changes can be made from one size cap to another.

Machine was developed to handle closures produced by manufacturer. This type of closure is said to give a positive seal no matter how many times container is opened or closed. Finger pressure applied to the center of the cap causes it to release grip on nozzle so it can be removed. Sides of the closure are pressed down and in for resealing.

This type of closure also has tamper-proof band. Bands are crimped in place and can only be removed by tearing. However, all bands are scored to make tearing operation easier.

Accessories for the automatic machine handling the closures are also available. These include change parts for additional sizes, automatic devices for detecting caps not properly positioned, and explosion-proof motors.

(Automatic capping and sealing machine was developed by Resina Automatic Machinery Co., Inc., Court & Creamer St., Brooklyn, N. Y., to handle U-Pressit closures, which are products of U-Pressit Products, Inc., Dept. CP, 420 Lexington Ave., New York, N. Y. . . . or for more information check CP 1258 on handy form, pages 2 and 3.)



2-3

ING



Your Packing Problem Could Be Gaylord's Next Success Story!

Extra weight to hold...odd shapes to pack...complicated construction and dozens of other unusual requirements... seldom stump the experts of Gaylord's Research and Engineering Division. In hundreds of ways they have designed corrugated and solid fibre containers to save

packing time, shipping money, and protect products better.

Gaylord packaging engineers practically never say "can't"! For information and cooperation, phone your nearest Gaylord office, listed in the classified section of your phone book.



Their unseen quality gives you an extra margin of safety.

GAYLORD CONTAINER CORPORATION

General Offices: ST. LOUIS . Sales Offices Coast-to-Coast









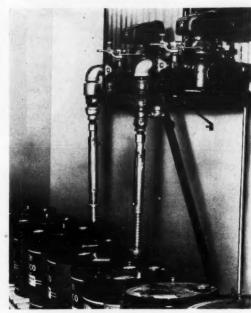
CORRUGATED AND SOLID FIBRE BOXES - FOLDING CARTONS - KRAFT BAGS AND SACKS - KRAFT PAPER AND SPECIALTIES

PACKAGING

Eliminate dribbling, cut time for filling 5-gal cans with special nozzles . . .

paint plant prevents damage to product cans, increases filling speed more than 100%

At the E. I. du Pont de Nemours paint plant at South San Francisco, California, the problem of dribbling of solvents during the removal of filling nozzles from one or five-gallon containers has been solved with the use of special filling nozzles. These nozzles are used in conjunction with quantity control meters employed in handling lacquer



Nozzles on filling line at Du Pont paint plant. Left hand essembly is shown in raised or off position, with nozzle withdrawn into sleeve to close discharge ports. Note how sleeve has entered can. At point where collar stops its downward progress, nozzle itself slides below sleeve to uncover discharge ports

thinners and other highly volatile liquids. Problem was particularly critical since even a small amount of spilled liquid would cut the exterior paint finish on the product cans.

Use of the filling device also has cut filling time for a five-gallon can to 15 seconds. With previous equipment, 35 to 50 seconds was required, depending upon foaming characteristics of the liquid being used.

Nozzle itself is designed with two side discharge ports near the bottom. These ports direct flow against sides of can to control foaming developed by fast filling rate. Discharge ports are covered by a spring and weight loaded sliding sleeve as the assembly is lowered into the can. Downward progress of the sleeve is stopped by a collar which rests on the top of the can, allowing the nozzle to drop farther into the container, uncovering the discharge ports.



Accurate-Fast-Simply and Ruggedly Designed-Versatile

The new Howe Mechanoprint, companion instrument to the Howe Teleprint, is a greatly simplified and modern Mechanical Weight Recorder built-in as an integral part of the Howe Tape-Drive Dial head. It is fast, ruggedly designed and has a minimum of working parts to assure the user of troublefree operation and long life.

The Howe Mechanoprint is furnished with a variety of adaptations for standard straight ticket, for ticket and tape, for odd-sized tickets and with identifier, manual or electrical time and date stamp, consecutive numbering device, etc.

The Howe Mechanoprint working in conjunction with the Howe Tape-Drive Dial Scale, is the very ultimate in a rugged, accurate, dependable Mechanical Weight Recorder and is a worthy companion of the Howe Teleprint (Electronic Remote Weight Recorder).

Ask for descriptive Form AM-A1. SALES AND SERVICE BRANCHES IN ALL PRINCIPAL CITIES



Dept. C	P5, Rutland, Vermont.
	d me: MECHANOPRINT FORM AM-Al ONDENSED SCALE CAT. No. 11
Name	
Title	
Company	
Address	
City	State
When	inquiring check CP 1260

When inquiring check CP 1260 on handy form, pgs. 2-3 origina the no age. vertica above to and is mad Nozzle of the

meters

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filling

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As the nozzle is raised upon completion of the filling operation, sleeve automatically drops to its original position against a rim at the bottom of the nozzle, effectively cutting off any after-drainage. Entire nozzle and sleeve assembly slides vertically over an inner tube in a fixed position above the roller conveyor which transports cans to and from the filling location. Nozzle assembly is made of brass to avoid spark hazards.

Nozzles are connected directly to discharge side of the meters. In this installation Model X-31 meters equipped with Model SRQ Quantrol are

used. This equipment delivers a single fixed quantity of liquid at a rate of 20 gpm for each filling cycle, and shuts off automatically when correct volume has been delivered.

Shutoff sleeve is lited to show how filling nozzle drops into container. Note one of two discharge ports designed to flare liquid outward to control foaming. As assembly is raised from can, sleeve drops against rim at bottom of nozzle closing discharge ports and stopping after-drainage

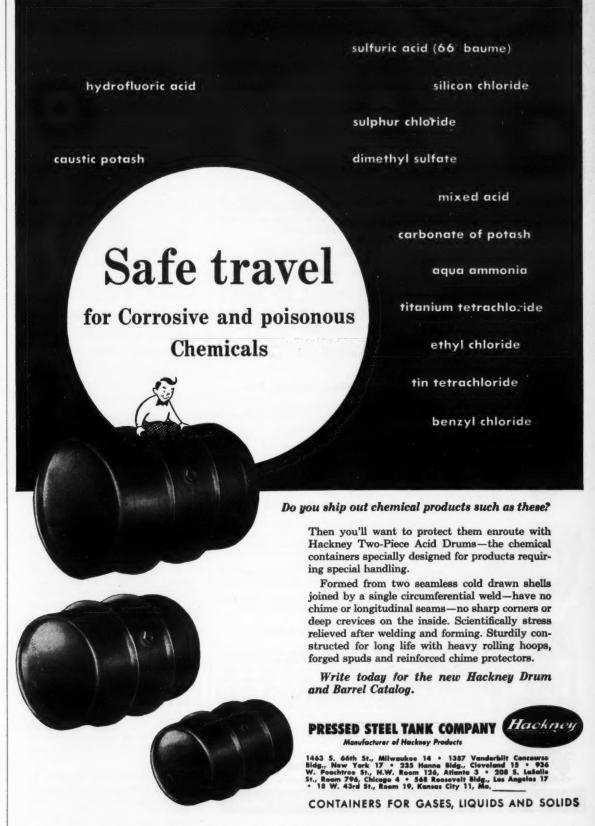
(Nozzles were developed by E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del. They are used in conjunction with Model X-31 meters, product of Ralph N. Brodie Co., Inc., Dept. CP, Lowell at 61st St., Oakland, Calif. . . . or check CP 1261 on handy form, pages 2 and 3.)

Pictures principles of export packing practices

Twenty-page, illustrated manual is intended as a guide for shippers to assure safe delivery of goods through proper application of shipping containers.

Booklet starts with an analysis of goods to be shipped in the light of container protection required for various types of loads. It continues with determination of box or crate specifications, nailing, strapping, interior blocking, bracing and packing and marking procedures.

"Export Packing" is available from National Wooden Box Association, Dept. CP, Barr Bldg., Washington 6, D. C. When inquiring specify CP 1262 on handy form, pages 2 and 3.



bagging?...checkweighing?...batchweighing?

with materials in these forms

Powders Pellets Dry mixes

Save time, trouble, dollars — bring your problem to THAYER

Wherever convenience, speed and accuracy count in weighing, checkweighing or filling of powders, pellets or dry mixes, it will pay you to check first with Thayer. Only Thayer Scales offer you such exclusive advantages as -

Shockproof leverage system — new design eliminates wear vulnerable knife-edge pivots.

Automatic control and operation - you use fewer personnel, minimize "human factor" in weight determi-

Optional design features — capacities, controls, feeding systems, and many other specifications are easily designed to suit your needs.

Precision construction - expert construction to proven design assures accuracy over long periods. For more complete details on the Thayer Scale suited to your job, write outlining your problem.



For holding, filling and checkweighing bags of powdered materials to tolerances within 2 oz. Feeder handles both highly flooding materials and those which flood only at times. Utilizes both gravity flow (plus compressed air or vibration when needed) and positive "dribble" feed. When proper weight is reached, feed gates close and checkweight lights indicate end of filling cycle. If weight is O.K., light flashes and filled bag is dropped or held for push button release.

Handles up to 6 bags per minute of unit weights ranging from 25 to 200 pounds. Also available as a net-weigher. Write for

Thayer Fully-Automatic Filling Scale Model 400N

New fully-automatic scale for weighing and discharging loads for bagging or batchweighing. Dry materials in granular or pellet form are readily handled by unique feeding system that closely controls amount and rate of feed of any free-flowing material without pre-aerating or separating. Once speed and weighing controls are set, operation is completely automatic.

Handles weight units from 25 to 200 pounds at speeds up to 10 units per minute. Stainless steel feeding system. Also available

as gross-weigher. Write for Bulletin 400N.

Thayer Checkweight Scale Model 200R

Automatically indicates weight of filled bags, drums and cartons. Offweight packages are separated from those properly filled by having the motor-driven, two-way conveyor deposit them at opposite ends of scale. Over- and under-weight tolerances are pendently adjustable over a wide range.

Dial shows how much each package is offweight and horn sounds as each improperly filled package is discharged. Optional

signal lights, remote dials, etc. available.

Model 200R handles up to 20 packages a minute with unit weights from 20 to 200 pounds. Write for Bulletin 200R.

Thayer Checkweight Scale Model 2005

This Thayer scale has same performance specifications as Model 200R but has the conveyor platform belt only 10" above the floor. With the conveyor located beneath the scale, the spillage from broken bags will fall to the floor and not affect the weight of the bags which follow.

Like the Model 200R, this scale may be equipped with additional dial indicators for installation at remote control stations, colored lights which show whether the package on the conveyor is over- or under-weight, or a printing recorder which records the exact weight of each package. Write for Bulletin 2005.

Send for details today!

THAYER SCALE AND ENGINEERING CORP.

492 East Water Street, Rockland, Mass.

Where weight is worth money . . . it pays to be sure!

When inquiring check CP 1264 on handy form, pgs. 2-3

PACKAGING

Packaging of reagents in flat-sided bottles saves space . .

easier to handle and open, improves appearance of lab

Increased laboratory shelf capacity by 25 per cent through use of flatsided bottles has been pointed out by reagent manufacturer. Specifically, five of the newer design bottles take up no more space than that required for four conventional, round bottles.

Package is also easier to open, offers a surer grip. Lined up on shelves, bottles orderly, face-front appearance adds to the appearance of the laboratory. Entire one-pound and one-quarter-pound line of company's dry analytical reagent products are packaged in the flat-sided

(Reagent chemicals packed in Stormor bottles are a product of Mallinckrodt Chemical Works, Dept. CP, 2nd and Mallinckrodt Sts., St. Louis 7, Mo. . . or for more information check CP 1265 on handy form, pages 2 and 3.)

Hard-to-print materials are easily handled . . .

ends need to print materials in separate operation

Almost all types of material processed in a continuous web can be printed with trademarks, code and part numbers, identifying names, or all-over decorative designs prior to rewinding, slitting, sheeting, or fabricating. Unit designed to do this is a machine which can be installed as part of a processing setup to eliminate need for printing materials in a separate operation. Installation is said to be simple, requiring little or no change in existing set-up.

Machine prints on metal, rubber, linoleum, cloth, plastics, gasket material, paper, laminations, and similar hard-to-print materials varying in thickness from .001" to 1", and as wide as 72". Printing is from rubber plates mounted on a steel cylinder, and impressions are made as the web of material passes between plate cylinder and impression

(The Gottschoprinter is made by Adolph Gottscho, Inc., Dept. CP, Hillside 5, N. J. . . . or for more information check CP 1266 on handy form, pages 2 and 3.)





FOR LABORATORY STOCK ROOM, OFFICE, ETC.



clean surface — yet can be quickly removed. Resists heat up to 160°. Just write on it with pencil or stylus—message Choice 'smudge. won't widths and colors. Handy dispenser with cutter bar.

Nothing else like LABELON-

the amazing "Write on it" plastic tape! Use it to mark

test tubes, glass vessels, test

batches, specimens . . . to identify circuits, panel boards,

fuel lines, instruments . . . to

hard-to-mark objects. Ideal, too, for office files, folders,

stored records, etc.

LABELON TAPE sticks with-

out moistening to any smooth,

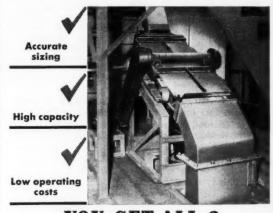
label stockroom shelves,

fil

See your nearest dealer or write for sample and prices.

LABELON TAPE CO., INC. 450 Atlantic Ave., Rochester 9, N

When inquiring check CP 1267 on handy form, pgs. 2-3



YOU GET ALL 3 with Link-Belt "UP" Vibrating Screens

Here's new economy in screening light to medium weight materials. "UP" Vibrating Screens, with simple two-bearing operation, provide positive, high-frequency vibration. If you're faced with a screening problem, call your Link-

Belt representative. Or write for Book 2577.



VIBRATING SCREENS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Mineapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia).

Sales Offices in Principal Cities.

When inquiring check CP 1268 on handy form, pgs 2-3

Time is saved by semi-automatic liquid filling machine with electronic timer unit . . .

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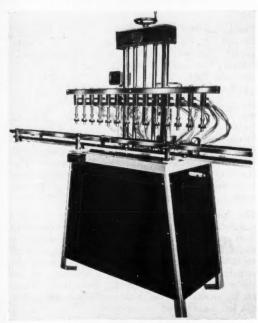
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SSING

simple operation eliminates need for skilled labor Manufacturer of straightline, semi-automatic liquid filling machines has added to line a machine, available in vacuum or gravity, equipped with a pneumatically operated filling head and electronic timing



Filling spouts automatically lower into container and product starts flowing

unit. To operate the machine, operator presses a momentary contact switch and filling spouts automatically lower into containers and product begins flowing. At the end of a predetermined amount of time, timer clicks off and spouts automatically rise to their original position. During operation the operator makes ready another set of empty containers for filling.

Use of Bellows Air Cylinder and Eagle Timer is said to offer endless filling operations without breakdown. Timer is adjustable from approximately 2 seconds to $2\frac{1}{2}$ minutes allowing practically any size container to be filled. Machine saves labor time and minimizes operator fatigue. Simple operation eliminates the need for skilled labor. Filler can also be used manually by making a simple adjustment.

(Product of Packer Machinery Corp., Dept. CP, 30 Irving Place, New York 3, N. Y. . . . or for more information check CP 1269 on handy form, pages 2 and 3.)

Don't miss Processing & Engineering Data starting on page 206



Bulk shipments can travel-bright and light

IN CONTINENTAL LEVERPAK DRUMS

There's no reason in the world why your bulk shipments shouldn't look as attractive as any other packages in your line. Not when you can purchase Leverpak fibre drums!

As part of Continental's Tailor-Made Package Service, we make these drums in 17 eye-catching colors. We reproduce names and trademarks in any of 14 different inks.

But good looks is only part of the

story. Leverpak drums are capable of carrying up to 40 times their own weight—their resiliency lets them shrug off bumps or falls and handling abuse. They load compactly and ride safely. The patented locking device is easy to open, easy to close. Metal chimes are flash butt welded for greater strength.

Why not ask our nearest sales office what Leverpak and other Continental drums can do for you. We'll be glad to hear from you at your convenience.



CONTINENTAL CAN COMPANY

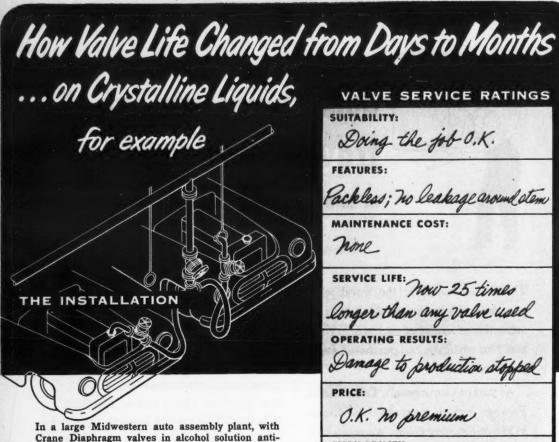
FIBRE DRUM DIVISION VAN WERT, OHIO



New York • Philadelphia • Pittsburgh • Tonawanda • Cleveland • Chicago Atlanta • St. Louis • San Francisco • Los Angeles • Eau Claire



When inquiring check CP 1270 on handy form, pgs. 2-3



THE CASE HISTORY

None of the many conventional valves nor the plug cocks tried in this service lasted more than a weekabout 2,000 operations.

freeze fill lines to automobile radiators.

The crystals present in anti-freeze would build up on seating surfaces and in the exposed valve stem threads. The valves leaked and were hard to operate. To the excessive maintenance needed was added the high cost of frequent damage to automobile finish by anti-freeze leakage.

Now Crane Packless Diaphragm valves control the trouble. Their sealed bonnet prevents contact of fluid and working parts; their seating design isn't hindered by crystal deposits. At last report, Crane valves have given over 50,000 trouble-free operations with no maintenance, and with indefinitely longer life assured.

In Crane Diaphragm valves, the diaphragm serves only to seal the bonnet, not for seating. It isn't pinched or stressed when valve is closed. Independent disc gives control of fluid even should diaphragm fail. These valves are made in a wide variety of body, diaphragm, discinsert, and body-lining materials to handle countless corrosive, abrasive, or ordinary services. See your Crane Catalog

or local Crane Representative.

THE BETTER QUALITY...BIGGER VALUE LINE...IN BRASS, STEEL, IRON

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois Branches and Wholesalers Serving All Industrial Areas

LVES . FITTINGS . PIPE . PLUMBING .

When inquiring check CP 1271 on handy form, pgs. 2-3

VALVE SERVICE RATINGS

Doing the job O.K.

Packless; no leakage around stem

MAINTENANCE COST:

none_

SERVICE LIFE: now 25 times longer than any valve used

Danage to production stopped

O.K. no premium











RADIOISOTOPES in INDUSTRY

Reviewed by Harvard L. Hull, Director Remote Control Engineering Division Argonne National Laboratory Lemont, Illinois

Containing 309 pages, "Radioisotopes in Industry" by John R. Bradford, is a compilation of selected papers which were presented at the Radioisotopes in Industry Conference at Case Institute of Technology in April, 1951.

There is consequent lack of organization and considerable duplication. The reader is left to make his own evaluation and he should realize this. It would have been helpful if the material in Chapter 2, "Radioisotopes for Industry"; Chapter 6, "Applications of Radioisotope Techniques", and Chapter 10, "Tracer Experiments", had been integrated. This comment also applies to Chapter 7, "Radiochemical Laboratories", and Chapter 8, "Design of Laboratories for Safe Use of Radioisotopes".

The design of radiochemical laboratories is a very new field. Individual workers have found solutions to their specific problems. Their experience should be useful to others but should not necessarily be taken as an authentic guide. A book of this nature obviously cannot be a handbook or a textbook, and the author makes no claims in this connection. There are many controversial questions which the author has left unanswered.

The book serves an important purpose of discussion of much needed information in a new field. It is to be hoped that the author will avail himself of an early opportunity to write a book on the application of radioisotopes with more emphasis on evaluation of equipment and techniques.

(To obtain "Radioisotopes in Industry" remit \$8 direct to Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York, N. Y. When inquiring specify CP 1272 on handy Reader Service slip, pages two and three.)

NON-AQUEOUS SOLVENTS

Reviewed by R. E. Probst, Research Chemist Research Dept., Standard Oil Co. (Ind.) Whiting, Ind.

"Non-Aqueous Solvents", written and compiled by Ludwig F. Audrieth and Jacob Kleinberg, is a good book for research chemists and physical chemists to have readily available. It gives an over-all picture to one interested in the subject and at the same time serves as a reference guide to anyone who wants to dig deeper into the field.

The first two of the fourteen chapters are devoted to a theoretical review of solvent properties in general — and of acids and bases in specific terms. Following these introductory remarks are four chap-

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ters describing liquid ammonia and its properties and applications as a solvent. Nitrogen-containing organic compounds considered as derivatives of ammonia are discussed in the seventh chapter. Acetic acid, sulfuric acid and hydrogen fluoride are described in detail in the next three chapters. The treatment given to hydrogen fluoride is of particular value because of its recently increased technical application as a solvent and as a reagent. Reactions and syntheses in liquid sulfur dioxide are outlined in the eleventh chapter of the book.

In discussing acid chlorides, such as selenium (IV)oxychloride, phosgene and others, as well as halogens and interhalogens in the following two chapters, the authors show their great variety of interest.

Lastly, high-temperature systems are outlined which will not be of exclusive interest to the metallurgist or ceramic chemist. The chronological design of each chapter, and a large number of tables and figures make this book easy to read.

To obtain "Non-Aqueous Solvents" remit \$6.75 direct to John Wiley & Sons, Incorporated, Department CP, 440 Fourth Avenue, New York 16, New York. When inquiring reader may simply specify CP 1273 on convenient Reader Service slip between pages two and three.

TUNGSTEN

Reviewed by L. F. Yntema Director of Research Fansteel Metallurgical Corp. Chicago, Illinois

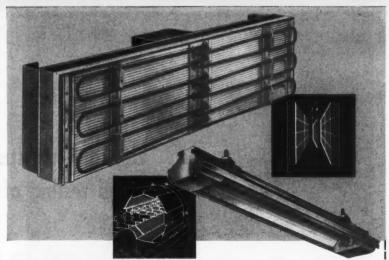
"Tungsten", by Colin J. Smithells, is the first American Edition of this authoritative text; it is similar to the Third Edition published in England in 1952. The last previous edition was in 1936. Sequence of treatment and the chapter headings are the same as in the earlier edition but a twenty-five percent increase in size — 326 pages in this edition — indicates quantitatively the amount of new material.

"Tungsten" has been considered the authoritative text and in its new edition, it is brought up to date. Topics covered are metallurgy, properties and applications.

The problems which are involved in reduction to metal and production of ductile metal as well as the effect of cold work are fully described. The discussion of properties is excellent. Basic facts and data are emphasized rather than details of engineering design and applications.

The text is well printed and free from typographical errors. "Tungsten" should be on the desks of all who are concerned with the metallurgy and uses of tungsten metal and in the library of chemists and physicists who may be particularly interested in the refractory metals.

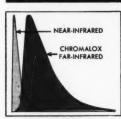
To obtain "Tungsten" remit \$8.50 direct to Chemical Publishing Company, Incorporated, Department CP, 212 Fifth Avenue, New York 10, New York. When inquiring reader may simply specify CP 1274 on convenient Reader Service slip located between pages two and three.



CHROMALOX Far-infrared solves hundreds of heating problems

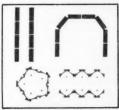
Here's your quick, economical and easy solution for curing, drying, degreasing, dehydrating, baking and other heating jobs. Pre-engineered Chromalox Units make oven building as simple as A-B-C, generate uniformly absorbed far-infrared heat for a multiplicity of processing needs. Temperatures up to 700° E are easily selected, accurately maintained. Low initial cost, low write-off cost, low operating cost!

ONLY CHROMALOX GIVES YOU ALL THESE ADVANTAGES



Color Blind Radiation

Longer far-infrared wave lengths are absorbed efficiently by all colors and textures.



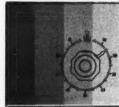
Low-Cost Oven Assembly

Pre-engineered Chromalox units require minimum expense to erect into complete ovens.



Heat Without Hot or Cold Spots

Chromalox radiant energy goes to work in a uniform pattern to span widest conveyor.



Infinitely Variable **Heat Output**

Heat from 0 to 100% of capacity to fit the exact temperature needs of the work.



- SHATTERPROOF CON-STRUCTION—nothing to break or contaminate the work in process.
- ON-DIMINISHING OUT-**PUT**—with all-metal Chromalox tubular far-infrared generators.
- square foot.
- QUICK HEAT-UP-with energy transformed instantly into heat on the work.
- any work involving volatiles.
- Chromalox tubular generators.



HIGH INTENSITY RADIA-TION-with top BTUs per

- ADDITIONALLY SAFE-for
- -Because of metal-sheathed, shock-resistant, long-lasting



MINIMUM MAINTENANCE

CHROMALOX Electric Heat FOR MODERN INDUSTRY

DATA SHEETS

available to you on

APPLICATIONS OF CHROMALOX RADIANT HEAT

R-111: Drying Silicon Carbide Discs
R-122: Drying Abrasive Cloth

□ R-122: Drying Abrasive Cloth

ASPHAIT
□ L-1055; Melting Korite Sealing Compound
□ R-105: Heating Asphalt to Improve Sealing of Batteries
□ RP-203: Drying Asphalt Tile
AUTOMOTIVE
□ R-126: Drying Tractor Parts
□ R-118: Baking Synthetic Enamel on Gasoline Engines
AJos see; Paint Baking

R-105: Heating Asphalt to Improve Sealing of Batteries BOTTLING (see Glass) CERAMICS

R-115: Drying a Water-Base Glaze on Ceramic Tile
R-134: Preheating Dinnerware to Prevent Warping
R-137: Drying Pottery
CHEMICALS (see Plastics)
COMFORT (HEATING
L-1077: Keep Men Warm, Keep Work on Schedule
R-114: Comfort Heating for a Foundry Worker

R-116: Vaporizing Oil from Sheet Metal Parts Also see: Paint Baking

DRUGS (see Glass)

R-109: Drying Cement Base in Television Tubes FINISHES (see Paint Baking, Degreesing)

C & R-2: Sterlizing & Preheating Bottles
R-127: Heating Television Tubes to Bake Interior
Graphite Coaling
PAINT BAKING

☐ R-134: Drying Glued Paper Sheeting

PRINTING

L-1090; Silk Screen Process Drying

R-103: Static Removal

R-107: Drying Ink on a Miehle Vertical Press

R-108: Ink Drying on 8-Unit Web-Fed Offset Press

R-108: Ink Drying on 8-Unit Web-Fed Offset Press

R-108: Ink Drying on 8-Unit Web-Fed Offset Press

R-124: Drying Ink on a Gass Press

R-124: Drying Ink on a Gass Press

R-124: Silk Screen Process Drying

REFRIGERATION

☐ L-1055: Dehydrating Refrigerator Colls RESTAURANT

Far-infrared Food Warmer L-1056: Curing Latex Foam Sponge Rubber
R-125: Cementing Crepe Rubber to Wooden Soles
TEXTILES

L-1068: Fusing Vinyl to Cloth Work Gloves
R-112: Dehydrdting Braiding Material

EDWIN L. WIEGAND CO., Radiant Heating Div. 7517 Thomas Blvd., Pittsburgh 8, Pa.

Send me application reports I have checked. Have a Chromalox Application Engineer get

in touch with me.	
Name	
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Street	
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When inquiring check CP 1275 on handy form, pgs. 2-3

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Whatever the function, Librascope simplified Computers and Controls are introducing new efficiency . . . in plant, product and process control of continuous or batch production. Whatever your specific need . . . Librascope, Inc., designers and manufacturers of both Analog and Digital Computers and Controls, can give you functionally designed equipment packaged to give the utmost in reliability and performance.

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an integral part of Baird
Associates, Inc. new spectograph,
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A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

When inquiring check CP 1276 on handy form, pgs. 2-3

for the laboratory

Electronic moisture analyzers speed testing of corn products

Units are employed in productionline testing of starch, various feeds, and oil cake meal



Operator determining moisture content of a residual feed product of corn. Unit may also be employed in analysis of starch samples similar to those in background of photograph

F IVE electronic moisture analyzers of current model are being employed in routine plant analyses by the Corn & Malt Products Div., Anheuser-Busch, Inc. of St. Louis, Mo. After having used an older model (G-4) of the instrument, this organization is currently replacing these units with the newer G-5 equipment. The instruments are operated by actual production personnel.

Designed for quick and accurate moisture checking in the plant, the G-5 Moisture Register can be used for direct testing without further laboratory work after it has been once calibrated against standard methods.

Manufacturer reports that unit is useful for both laboratory and production testing emphasizing speed, rugged construction, simplicity and precision.

The Model G-5 consists of a master measuring unit, hydraulic press, electrode, sample cup and range box. The unit is designed for testing granular, ground, loose, shredded and powdered materials. Rapid electronic moisture determinations in granular material can be accurately made only if the material at time of analysis is homogeneous, uniform, and without variations in particle arrangement. By applying pressure to the sample,

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(Infoceive Div., ture

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122

this unit brings the material to a compressed condition where particle variations are unimportant and all air is eliminated.

Each range box is constructed and adjusted to cover a specific moisture range on a specific material and to spread that range over as much of the meter dial as possible. Thus, these units can be added to the basic instrument to test a variety of materials and moisture ranges. The user may conveniently check instrument for correct operation by means of a calibration standard furnished with each range box. All measurements made with the unit are independent of weight or volume measurements.

Typical products which may be tested with unit include: dried eggs, alfalfa flour, sugar, bagasse, flour, paint pigments, wood flour, clay, plastic refractory, slaked lime, starch, various meals and feeds, seeds, and some non-detergent soap products.

(Information regarding uses of the instrument received through the courtesy of Corn & Malt Products Div., Anheuser-Busch, Inc., St. Louis 18, Mo. Moisture analyzers are products of Moisture Register Co., Dept. CP, 1510 W. Chestnut St., Alhambra, Calif. . . . check CP 1277, pages 2 and 3.)

Direct-reading instrument analyzes for TEL in gasoline . . .

convenient method cuts assay time to fraction of that normally required

Uses: This particular apparatus is designed to determine the tetraethyl lead content of gasoline within the range from zero to five milliliters per gallon.

Features: Simple operation—operator merely presses 4 buttons, then turns 4 knobs until the



Convenient, time-saving unit determines tetraethyl lead in gasoline and gives result directly in ml/gal.

Method replaces slower gravimetric procedure

(Continued on next page)

SMOKE BLOWN THROUGH a Norton ALUNDUM* seamless tube escapes throughout the tube's entire area. Such a tube gives most efficient filtration and ease of cleaning by back washing. When selecting tubes for your specific application be sure they embody this important feature.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

POROUS MEDIUMS

Making better products to make other products better NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

Why Norton seamless tubes give you better filtration

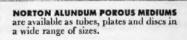
Only Norton ALUNDUM tubes have the seamless construction that means more uniform filtration and enables faster, more thorough cleaning. And like all Norton porous mediums they're made with the patented controlled structure process that assures even distribution of pores — in the size and open-pore ratio that best meets your needs.

Cost-cutters over a wide job range

In any form, Norton porous mediums have exceptional resistance to breakage, chipping and acid and alkaline conditions. They're designed to perform better, last longer and cut your operating costs in a wide variety of chemical field applications. For example: filtering water or solvents... cutting oils, wine and other liquids...reclaiming cleaning fluids and industrial waste... in boiler feed water treatment.

Get the whole story

See your Norton Representative for complete facts on how you can get more savings and satisfaction with Norton porous mediums. Or write describing your requirements, to Norton Company, 564 New Bond St., Worcester 6, Mass. Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.



When inquiring check CP 1278 on handy form, pgs. 2-3

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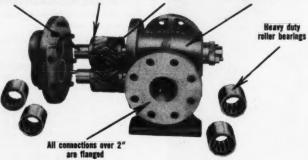
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when you buy and use the New Sier-Bath "Hydrex" **PUMPS** 32 SSU to 250,000 SSU. Capacities 1-500 GPM; 300 PSI for continuous duty 500 PSI for

Shafts hardened and ground Easily replaceable at hearings. No inner races side wear plates

Precision manufac- Only one stuffing box (under tured retors suction pressure)



New Simplified Design Allows High Quality at Low Cost

- Hydraulically balanced axially
- Shaft hardened and ground at stuffing box. Minimizes wear.
- · Easy to assemble, disassemble-cuts maintenance costs.
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- Short, large diameter shafts
- · Horizontal or vertical construction

Write for "Hydrex Pump

Reply Sheet." Reverse

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ier-Bath Screw and "Gearex" Pumps for higher capacities and pressures . . . also mfrs. of Precision Gears and flexible Gear Couplings.

When inquiring check CP 1279 on handy form, pgs. 2-3

FOR THE LABORATORY

galvanometer balances at zero. Result is read directly in ml of TEL per gal of gasoline.

Description: Employing a polaragraphic principle, the Fisher TEL-Meter is reported to be as accurate as the slow gravimetric method normally employed in the determination. By utilizing the ratio of two currents (lead and the pilot ion, cadmium), unit eliminates troublesome variables such as temperature, kind of metal, mass of mercury drops and their dropping rate.

Apparatus measures the two currents, takes their ratio, figures the lead concentration and reports it directly in ml of TEL per gal. Unit is furnished complete with polarographic cell, capillary, leveling bulbs, batteries, control box and all of the essential connectors.

(Unit is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or reader may secure more information by checking CP 1280 on convenient Reader Service slip, pages 2 and 3.)

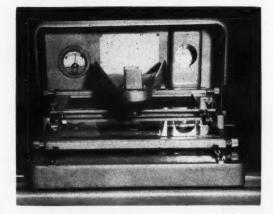
Reads photographic densities directly on linear scale . . .

instrument is compact and insensitive to vibration, electric disturbances

Uses: Accessory for customary emission spectroscopy work.

Features: Through use of a double beam null system, line voltage fluctuations have no effect on results. There is no galvanometer, with the result that the instrument is compact and insensitive to vibration and electrical disturbances. Maker reports that drift problems are virtually eliminated by instrument.

The Comparator Densitometer is Description: a double beam automatic servo-type instrument which is calibrated to read photographic densities



Comparison densitometer projects reference plate on screen adjacent to image of plate measured. Comparison spectrum is projected at 10x magnification

directly on a linear scale. Density is measured by obtaining a null balance with a comparison beam which has passed through accurately cali-





SCREENING We can produce original or replacement are replacement are practically screens in practically any size or shape, from any type of wire cloth any type of wire cloth are quantities. We'll he glad to quantities on large quantities. We'll be glad to quote on your needs. brate

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FILTERING Our designers and pro-Our designers and pro-duction men are fa-miliar with practically all types of filter presses, thus can de-sign and fabricate wire cloth filter leaves for sign and fabricate wire cloth filter leaves for vertical or horizontal models, whether pres-sure or gravity fed.



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Non-standard parts are standard with Cam-standard with Cam-standar

Here's the full story, FREE ...84-page catalog describes

Cambridge facilities for fabricating wire cloth parts. Also contains useful metallurgical data. Write for your copy today.



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METAL SPECIAL
CONVEYOR METAL
BELTS FABRICATIONS

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When inquiring check CP 1281 on handy form, pgs. 2-3

brated logarithmic apertures driven by a servo system. Reading of density scale is facilitated by an illuminated magnified dial. Line to be measured is located with a comparison spectrum on a scale at 10x magnification.

Range is zero to 2.00; zero point may be arbitrarily adjusted. Smallest scale division is 0.01 density unit. Comparator projects a comparison plate adjacent to plate being measured on screen. Screen area is 5 x 1-1/2" for both spectra.

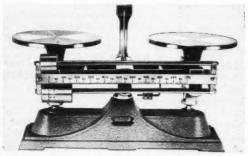
Photographic plate is driven with a precision, twospeed mechanism 0.22 mm per min and 1 mm per min. Fine manual scan is also provided. Optional provision is available for continuous recording of plate densities with a standard potentiometer recorder.

(Product of Baird Associates, Inc., Dept. CP, 33 University Rd., Cambridge 38, Mass. . . . or for more information check CP 1282 on handy form, pages 2 and 3.)

Precision balance features use of micrometer poise

Uses: Designed for use from 0 to 500 gm. Features: Micrometer poise allows use of unit over range from 0 to 1000 gm without addition of supplementary weights.

Description: Balance has a capacity of 5000 gm and a sensitivity of 0.5 gm. Self-aligning bearings are of agate and knife edges of precision hollow-ground tool steel. Balance beam is constructed of light weight, high strength duralumin. Unit can be furnished with a choice of stainless steel plates, nickel-plated brass pans, or a seamless brass scoop and stainless steel weighing platform.



Balance illustrated is equipped with stainless steel plates and etched aluminum beam. Convenient micrometer poise permits weighing from 0 to 1000 gm

The poise is designed so that it may be slid along the beam for rapid traverse and rotated for final positioning. Poise barrel is calibrated in 0.5 gm increments which subdivide the 10-gm beam divisions. Unit also has an undivided tare beam of 1-lb capacity.

(Product of Ohaus Scale Corp., Dept. CP, 1050 Commerce Ave., Union, N. J. . . . or for more information check CP 1283 on handy Reader Service slip, pages 2 and 3.)

New wearproofing metal to protect parts against corrosion, erosion and abrasion...

... CARBOLOY GRADE 608 CHROME CARBIDE

Here is a created-metal which in tests has been outstandingly effective for combatting a combination of corrosive, abrasive and erosive agents — Grade 608 Carboloy Chrome Carbide.

Chrome Carbide (not a cutting tool metal) is fast proving itself suitable for wear-proofing applications. It is being tested for lengthening the life of equipment parts where acids, alkalis, heat, oxidation and the like are most troublesome.

Suggested spots for Chrome Carbide are in

spray nozzles, steam valves and orifices for processing foods, soaps and drugs . . . valve balls, seats and bearings for oil refining . . . core pins for ceramic baking . . . plus countless other applications in many fields.

Perhaps you can use Chrome Carbide to advantage. Check the physical properties of this new metal.

For full details on characteristics, properties, applications and test results, mail coupon today.

CHROME CARBIDE (GRADE 608)

Composition: 83% Cr₃ C₂ 2% WC 15% Ni

Hardness: (nominal) 88R_A Density: (nominal) 7.0 gm/cm³

Transverse Rupture Strength: 100,000 psi

Abrasion Resistance: Much higher than steel, not as high as tungsten carbide.

Steam Erosion Resistance: Excellent resistance. It will outlast conventional tungsten carbide by 50 to 1.

Coefficient of Expansion: 4.9 x 10-6 in./in./°F (from 68°-248°F) 5.1 x 10-6 in./in./°F (from 68°-427°F) 5.3 x 10-6 in./in./°F (from 68°-608°F) 6.1 x 10-6 in./in./°F (from 300°-1800°F)

Corrosion Resistance: About 30 times the resistance of 18-8 stainless steel with sulphuric acid as the corrosive agent.

Electrical Conductivity: 2.2% of Copper Electrical Resistivity: 80 michroms/cm/cm²

Magnetic Properties: Non-magnetic

Stability: Complete stability, with no apparent internal strains.

Oxidation Resistance: a) excellent up to 1000°C (1832°F). b) favorable, even beyond 2000°F.

WITHSTANDS GREAT HEAT: After exposure in air at 1850° F. for 24 hours, Grade 608 Chrome Carbide (center) is hardly discolored, while 18-8 stainless steel (left), and tungsten carbide (right) are all but disintegrated. Bars shown above were originally of the same size and shape.

were originally or

GET CHROME CARBIDE TRY-IT-YOURSELF KIT

Test Chrome Carbide yourself! Kit includes: 3 bars $\frac{1}{4}$ " sq. x 2"; 2 bars $\frac{1}{4}$ " sq. x 1"; 3 bushings $\frac{5}{16}$ " I.D.; 1 rod,

1/8" dia. x 1" long. Price of kit . . . \$10.75. Kit is adequate for conducting a wide variety of tests in your laboratory.

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When inquiring check CP 1284 on handy form, pgs. 2-3

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Here's Insurance Against Down-Time

STEAM CONNECTION

Pipe sizes 16" through 3"

Where one "burp" from a connection to revolving shafts and drums may mean a work stoppage on costly equipment, the ROTARY UNION is your best insurance against loss of production.

The ROTARY UNION is built so that stress and strain is removed from moving and sealing parts. It is self-adjusting to pressure . . . never needs tightening or adjusting. Many ROTARY UNIONS have given perfect sealing service for three years and more without mechanical maintenance of any kind.

Our 40 standard types and sizes of ROTARY UNIONS cover all common applications. Factory engineers are available at all offices to recommend the ROTARY UNION for your equipment... or to work out your special sealing problems. Call our nearest office or write Dept. 5C for our Catalog.

"WHERE Good Connections count"

*Reg. U.S. Pat. Off.

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When inquiring check CP 1285 on handy form, pgs. 2-3

FOR THE LABORATORY

Direct ratio-recording spectrometer can operate as either single or double beam unit . . .

infrared spectra of complex organic compounds may be recorded directly in transmittancy

Uses: Suitable for laboratories having a wide variety of problems, many of which require special attachments for instrument. Unitized construction of unit permits use of microscopes, reflectance attachments and accessories for ultraviolet and visible recording. Some of these attachments are now under consideration.

Features: Combines versatility of single beam instruments with the efficiency of double beam spectrometers.

Description: Based on the Savitzky-Halford ratio-recording system, the Model 13 Ratio-Recording Spectrometer utilizes a unitized "building block" construction. Components of assembly include: monochromator, source assembly, wavelength drive, slit servo mechanism, electronic assembly, control panel, source regulator, densitometer, recorder, and a console.

Range of unit is from 1 to 40 microns with suitable prisms. Manufacturer reports that resolution is better than 2 cm⁻¹ at 1000 cm⁻¹. Entire unit is mounted in a self-contained mobile console.

In addition to giving maximum ease of sampling and rapid prism interchange associated with single beam instruments, unit eliminates atmospheric interference and gives point-by-point comparison of two records for transmittance spectra.

(Spectrometer is a product of The Perkin-Elmer Corp., Dept. CP, Norwalk, Conn. . . . or for more information check CP 1286 on handy form, pages 2 and 3.)

Convenient slide set-up speeds determination of melting points . . .

unit operates in range from 50 to 250°C

Uses: Principally for testing chemicals which have distinct melting points. Also is useful in determination of softening or melting points of other temperature-sensitive materials such as waxes, resins and gums.

Features: Slide and pointer arrangement allows operator to determine melting points with rapidity and ease. Arched construction of assembly gives clear view of the bar and pointer at all times.

Description: The Parr melting point apparatus, Series 3821 — Dennis Type, is similar to a Maquenne block in that a sample is heated on an exposed metal surface until melting occurs, whereupon the surface temperature at the point of melting is observed. Heated stage of apparatus consists of a silver-coated copper bar with an electric heater at one end producing a thermal gradient along the bar. When a distributed sample melts at a point on the bar, temperature at this spot is determined by touching it with a

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PLUG VALVES

BY LUBRICATING THEM





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DELTA Automatic

Plug Valve LUBRICATOR

This simple, fool-proof low priced device forces a measured amount of lubricant into the valve automatically each time it is opened and closed. Ideal for those frequently used valves on:

LOADING RACKS MANIFOLDS LPG SYSTEMS

Valve may be opened and closed as many as 90 times before refilling reservoir. Let us show you how it will cut your costs.

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With the DELTA High Pressure Gun, DELTA Fittings and DESCO Specialized Lubricants

.... you can lubricate 10 to 15 valves in the time usually required to service one with conventional jack screw.

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When inquiring check CP 1287 on handy form, pgs. 2-3 constantan wire pointer, thereby forming a copper-constantan thermocouple.

Heavy counterweight presses the constantan pointer firmly against bar to obtain good contact and reproducible temperature readings. There is sufficient flexibility in contact arrangement so that neither the pointer nor bar will be damaged if counterweight is dropped accidentally.

(Apparatus is a product of Parr Instrument Co., Dept. CP, 211 Fifty-third St., Moline, Ill. . . or for more information check CP 1288 on handy form, pages 2 and 3.)

Determines almost all metals and some non-metals

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Useful in the analysis of 700 different substances, the flame photometer is especially valuable for routine laboratory analysis, research investigations and process control. At the present time, the flame spectra of 57 elements have been studied; about 35 of them can be determined with high specificity, another 20 with fairly good selectivity, and a few in a non-selective but sensitive manner to the ppm range. Most metals can be determined both quantitatively and qualitatively with this one instrument.

Reprint of a technical article states that certain oil companies have found flame photometry so advantageous that the major portion of all their qualitative and quantitative inorganic analysis for metal content is now done by this technique. Determinations of lead in gasoline and in water bottoms from gasoline tanks; vanadium in oils; metal-based additives in heating oils; various metals in lubricant additives, sulfonates and naphthenates; iron in catalyst; chromium, nickel, iron, lead, copper, magnesium and manganese in compressor residues; iron, calcium and magnesium in sewer water; copper, sodium, magnesium, nickel, iron and tin in slag; iron, nickel and copper in fractionator and condenser sediments and pipe still condensate water; and for monitoring the production of calcium sulfonate are being conducted by this method in one refinery.

Other analyses in industrial laboratories offering applications for the method include: brine solutions, mineral water, beverages and related materials for various metals; minerals, nonferrous metals, portland cement, clay, glass and related materials for sodium, potassium, calcium, lithium, iron, manganese, magnesium, rubidium, copper, silver, aluminum, lead, barium, lanthanum and others; steels for manganese, chromium, cobalt, nickel, copper, lead, boron; plant leaves; fertilizers; soils; grain and fruit.

Reprint gives information on applications, design, interferences and advantages of the flame spectrograph. Convenient table lists wavelengths and detection limits of various elements.

Bul R-56-11 is issued by Beckman Instruments, Inc., Dept. CP, 820 S. Mission St., South Pasadena, Calif. When inquiring specify CP 1289 on handy form, pages 2 and 3.

Assure Top Efficiency

in your plant with



BROWN FINTUBE Sectional HEAT EXCHANGERS

• Avoid the loss in efficiency that results from just a few thousandths of an inch of deposit on the tubes, by using Brown Fintube Sectional Exchangers for every heating and cooling service.

The longitudinal passages of Brown Fintube Sections control the material flow, eliminating baffles and the back eddies that encourage fouling. Their greater heating surface - 2 to 8 times that of bare tubes permits more BTUs to be transferred at lower temperature per square foot of surface, minimizing "coking" and charring. Brown Fintube Sections are easy to clean — and — by simply manifolding a few extra sections into the unit, one stream after another can be taken off line for cleaning while the rest - always thoroughly clean - carry the unit's full rated capacity, year after year - without any shut-downs.

Efficient heating, is only one of Brown Fintube's many advantages. You'll find full details in our Bulletin No. 512. It will give you ideas.



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When inquiring check CP 1290 on handy form, pgs. 2-3

Simplifies multi-sample counting in isotope laboratories

Uses: Used with various counting and timing units for multi-sample counting of radioactive samples.

Features: Carries up to 50 radiolabeled samples at one time, yet is compact, requiring only 14 x 15" of bench space.

Description: Roto-Matic Sample Changer, Model C-110, utilizes a simple, three-position turntable which selects a sample, places it in counting position within the 2" lead shield, and loads it into the storage sample magazine when count is completed. Up to 50 samples can be counted, the cycle repeated, or background radiation count recorded.



Automatic sample changer for counting radioactive samples incorporates 8 preset count settings and may also be controlled by a preset time or count scaler. It also will provide preset time operation with any scaler and a suitable timer

Unit may be used with any scaling unit of the manufacturer involved or with similar scalers of other manufacture. Associated timing printer provides a premanent count record of every sample counted.

(Product of Nuclear Instrument and Chemical Corp., Dept. CP, 229 W. Erie St., Chicago 10, Ill. . . . or for more information check CP 1291 on handy form, pages 2 and 3.)

Ultracentrifuge rotor permits processing of 3 separate 5.5-ml samples . . .

unit uses force up to 178,435 times gravity

Uses: Particularly useful for sampling of material in preparation for subsequent biological or chemical assay — especially where biological or chemical correlation with optical sedimentation data is required or where optical analysis is limited by nature of material.

Features: Three separate 5.5-ml samples can be ultra-centrifuged up to a force of 178,435 times gravity at a maximum speed of 39,460 rpm.



POWER for Diamond Alkali's Gulf Coast chlorine plant is produced economically as a by-product of process steam by

three G-E 10,000-kw turbine-generators (one shown). Long reliable service distinguishes G-E turbines in chemical industry.

Engineered power system is key



COMPLETE RECTIFIER SYSTEM supplied and co-ordinated by General Electric includes (left to right) cathode breakers,

excitation cubicles, rectifier tanks, and anode breakers. The 12 rectifiers shown each contain 12 ignitron tanks.

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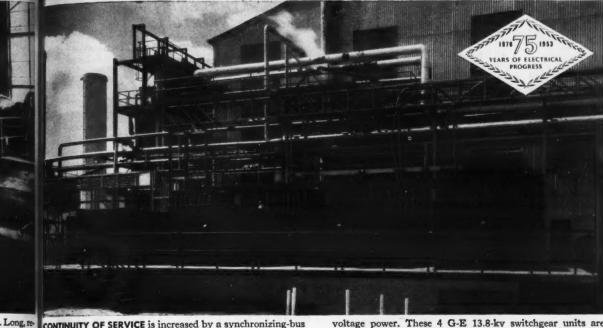
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plant po Addition ity. G-E bus syste G-E con room is provide system p Whate an exper

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CONTINUITY OF SERVICE is increased by a synchronizing-bus system and secondary selective arrangement to provide low-

industry.

voltage power. These 4 G-E 13.8-kv switchgear units are grouped outside the turbine building to shorten cable runs.

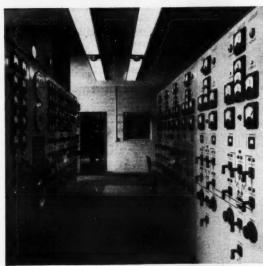
to chlorine plant's high output

Diamond Alkali installs engineered system to help maintain 920-ton daily output

In its Gulf Coast plant near Houston, Texas, Diamond Alkali produces 920 tons per day of caustic soda and liquid chlorine. Because of the large amounts of process steam required—which can also be used to generate power as a by-product—they made use of the help offered by G-E application engineers in applying the equipment needed for an addition to their power system.

Result: G-E turbine-generators develop low cost plant power as a by-product of needed process steam. Additional power is purchased from the local electric utility. G-E metal-clad switchgear units and synchronizing bus system assure power continuity for essential loads. G-E control equipment for power house and rectifier mom is grouped together to save manpower and to provide centralized control. A complete G-E rectifier system provides continuous d-c power for cell lines.

Whatever your chemical plant's power-system needs, an experienced G-E application engineer can help you meet them efficiently, economically. For more information, contact your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, N. Y. 662-40



CENTRALIZED CONTROL of both the turbine-generator (left) and of the rectifiers (right) in one location enables one set of operators to supervise the plant's entire power system.

Engineered Electrical Systems for Chemical Plants

GENERAL ELECTRIC

When inquiring check CP 1292 on handy form, pgs. 2-3

Description: Type SW-39 Spinco swingingbucket rotor is designed so that sedimentation conditions approach those in a conventional sectoral analytical cell, providing minimum reorientation of boundaries upon deceleration to rest. Rotor consists of three yokes mounted on a central hub, each yoke supporting an individually-sealed bucket.



Removable ultracentrifuge rotor accommodates three separate samples for processing. Plastic stand supplied with rotor permits attachment and removal of buckets outside operating chamber of ultracentrifuge

Each bucket is attached to the yoke by an easily removable pivot pin and is arranged to hold a ½" diam by 2" long plastic tube. Buckets, which can be adapted to fit any type of tube within the given dimensions, are designed to accommodate special quartz tubes where an absorption analysis of sample is required.

(Product of Specialized Instruments Corp., Dept. CP, 629 O'Neill Ave., Belmont, Calif. . . . or for more information check CP 1293 on handy form, pages 2 and 3.)

Announces developments in laboratory products

Informative, 32-page booklet features a picturestory dealing with the pharmaceutical industry its operations and background. Interesting photographs show research and control activities at the American Pharmaceutical Association as well as various pharmaceutical manufacturers.

Instruments announced in bulletin include units for color analysis of petroleum products, determination of cloud and pour points of oils, and cleaning (and drying) of viscometers. In addition, items of laboratory apparatus described range from a stainless steel clamp for thermometers to an accessory for concealing service pipes in laboratory furniture assemblies.

"The Laboratory," Vol 22, No. 3 is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 1294 on convenient Reader Service slip between pages two and three.

kers. The

ING



When inquiring check CP 1295 on handy form, pgs. 2-3

FOR THE LABORATORY

Circulate heated air in definite pattern through chamber . . .

ovens are available in vertical or horizontal flow type

Uses: Designed for closely controlled temperature uses in production and laboratory.

Features: Equipped with a high pressure motor driven blower which propels heated air in a definite air-flow pattern through



Cabinet ovens make possible closer control of uniform temperature and better performance

the work chamber. This action is reported to prevent any disturbance due to radiant heat and assure temperature uniformity.

Description: Available in two types of air-flow patterns, Cabinet Ovens are designed for operation at temperatures to 650 and 850°F on 220 or 440 v. Shell construction is 18 and 20 gage oven steel reinforced and welded. Units are insulated with Fiberglass.

Indicating temperature control, high volume adjustable air-flow, high and low heat switch for close control and quick recovery, Inconel-sheathed heating elements, manual interlock for purge period operation of blower without heat, and electrical interlock for turn-off of heat in case of blower motor failure are other advantages of cabinet ovens.

(Ovens are manufactured by Grieve-Hendry Co., Inc., Dept. CP, 1811-19 W. Lake St., Chicago 12, Ill. . . . or for more information check CP 1296 on handy Reader Service slip between pages 2 and 3.)

POLYETHYLENE VINYL POLYSTYRENE



REPROCESSED SOLD BOUGHT

We offer a steady market for your scrap and surplus plastic materials

Tanney-Costello, Inc.



868 E. Tallmadge Ave., Akron, Ohio

Phone: Blackstone 4148 . Cable: "COSTAN" AKRON

When inquiring check CP 1297 on handy form, pgs. 2-3

SPERRY
HAS THE ANSWERS
—Whatever Your
Filtration Problems

May Be . . .

During a half century of designing filter presses for America's manufacturing companies, Sperry has solved nearly every known type of industrial filtration problem. Sperry Filter Presses are flexible in size and design . . . there is a complete range of filter bases . . . and a choice of six different closing devices.

Send for the Sperry Filter Press catalog and | you'll see why Sperry can solve your filtration | problems efficiently and economically.

D. R. SPERRY & CO.

Batavia, Illinois Filtration Engineers for More Than 60 Years

Eastern Sales Representative: George Tarbox, 808 Nepperhan Ave., Yonkers 3, N. Y. Yonkers 5-8400

Western Sales Representative: B. M. Pilhashy, 833 Merchants Exchange San Francisco, 4, California DO 2-0375

When inquiring check CP 1298 on handy form, pgs. 2-3

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Thermometer calibration baths available in five models . . .

manufactured according to ASTM requirements Hallikainen-Shell Development Thermometer Calibration Baths are available in five models — an aging bath, an ice point bath, and three others for calibration of thermometers in ranges between —40 and 350° Centigrade.

Ice Point Bath, Model 1010A — Consists of an unsilvered Dewar vessel; a rotatable, duraluminum thermometer holder; and a viewing telescope which is capable of magnifying twenty times.

Low Temperature Bath, Model 1011A — Similar to above unit except that a stirrer has been added so that it may be used for testing low temperature thermometers ranging from -40 to 80°C.

Medium Temperature Bath, Model 1012A — Has range from 20 to 230°C and uses oil as a bath medium. It is well insulated, having a cover, thermometer holder and a stirrer to provide uniform temperature within the bath.

High Temperature Bath, Model 1013A — For calibration of thermometers ranging from 230 to 550°C Molten tin is usually used as bath medium. Wells are provided for thermometers and a stirrer for agitating the tin. Automatic control of this bath is not actually required as unit is used by adjusting heat input for slowly rising temperature.

Aging Bath, Model 1014A — For permanency of range testing and for determination of change in thermometer bulb volume. Consists of an insulated electrically heated aluminum block into which stainless steel tubes for thermometers have been cast. Control of temperature at a specified aging point is accomplished by use of a pyrometer indicating controller, available at extra cost.

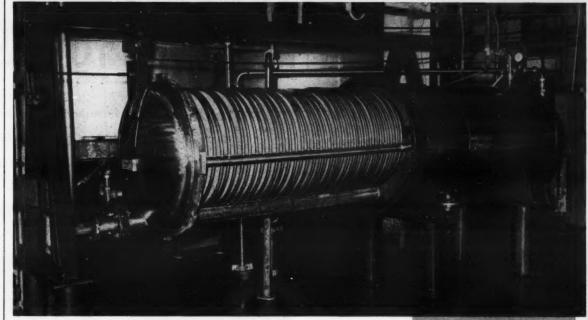
(Products of Hallikainen Instruments, Dept. CP, 1341 Seventh St., Berkeley, Calif. . . . or for more information check CP 1299 on handy form, pages two and three.)

Kit aids in demonstration of crystalline structure

Compact, portable crystal model kit provides a simple and effective means of visualizing through a demonstration model, various crystalline structures. Components of unit allow user to construct quickly and easily any of fourteen possible space lattices in six crystallographic systems, clearly showing actual packing of atoms or ions in the unit cell. Assemblies up to 5 x 5 x 5" can be constructed.

Applications, features and components of crystal model kit are described in illustrated, 4-page bulletin. Typical assemblies of various crystal structures are pictured, and various components of kit are shown in detail.

Bul D-3040 is issued by Harshaw Scientific, Div. of The Harshaw Chemical Co., Dept. CP, 1945 E. 97th St., Cleveland 6, Ohio. When inquiring specify CP 1300 on handy form, pages 2 and 3.



Here's a **BIG** filter that costs less to operate

The Niagara Style "H" Filter will filter liquids to high clarity, at rates up to 30,000 GPH.

It also gives you easy recovery or disposal of as much as 150 cu. ft. of solids at a time.

Sizes range up to 1,500 square feet of working filter area in one compact, leakproof unit.

CLEANED IN A FEW MINUTES

Cake discharge is faster than anything you've ever seen in a filter this big. Cakes can be blown dry in the filter, are then dropped into a discharge hopper simply by rapping the all-metal leaves with a rubber mallet. That's all there is to it.

The filter in the picture is opened, cleaned, and closed in less than ten minutes, by one man. It can be taken off-stream, drained, opened, cleaned, closed, filled, and precoated in less than 30 minutes.

IDEAL FOR CORROSION RESISTANCE

The simple fabricated shell can be constructed in stainless steel and special alloys for corrosion resistance, and can be readily and cheaply jacketed. Special construction, to match your needs, costs far less than usual for a filter of this size.

COMPLETE FILTRATION SERVICE

How can we help you? We're equipped to test samples for filterability . . . pilot the filtration for you . . . design, build and install a filter or a complete system to fit your process.

AMAZINGLY FAST CLEANING All-metal filter leaves roll out of filter as a with Operator taps the leaves to drop cake into trough hopper, or wagon. Then he return clean leaves into filter which lode pressure-light with one swift motion



HIAGARA VERTICAL FILTERS are leakproof, pressure-fight; gelddy deaned between cycles by one man. All-metal leaves exually require no doffe.

To get details quickly, just write us or mail the coupon today.



Engineering and Sales Office: 3083 Main St., Buffalo 14, N. Y.
(When writing, please use above address)
Factory: East Moline, Illinois

IN EUROPE: Niagara Filters Europe, 36 Leidsegracht, Amsterdam-C, Holland

NIAGARA FILTER Division, American Machine and Metals, Inc.
3083 Main St., Buffulo 14, N.Y.
Please send information
on Niagara Filters for (product or operation)

Name_____
Title____
Company____
Address_____

When inquiring check CP 1301 on handy form, pgs. 2-3

ING

Use of interference filters improves sensitivity of colorimeter . . .

versatility of instrument is increased by choice of sample holders

Uses: In clinical and analytical work, biochemical determinations, pharmaceutical analyses, oils and fats analyses, and metallurgical determinations.

Features: Unit employs transmission-type interference filters — featuring narrow pass bands. Consequently, filters transmit light of high spectral purity. Maker reports that filters will consistently perform within the closest tolerances at the stipulated wavelength; at a nominal peak transmittance of 45%; and with a half width of less than 20 m μ .

Description: The Improved Monochromatic Colorimeter, Model 35, is a single cell, direct reading; photoelectric-type instrument. Unit incorporates transmission-type interference filters which allow increased sensitivity and greater con-



Transmission or density is easily read in an instant on galvanometer scale of monochromatic colorimeter

centration range. Versatility of instrument is increased by choice of sample holders — permit analysis of samples in either 13- or 25-mm rectangular curvettes or standard 13- or 19-mm reaction test tubes.

Dual purpose filter holder carries filters individually. Unit will accept a single standard 1 x 1" Bausch & Lomb Interference Filter; a single standard 2 x 2" glass or interference filter; or a combination of the 1 x 1" and 2 x 2" sizes.

(Colorimeter is a product of Bausch & Lomb Optical Co., Dept. CP, 635 St. Paul St., Rochester 2, N. Y. . . . check CP 1302, pgs. 2 & 3.)

Provides useful information on scientific glassware

Illustrated, 12-page bulletin depicts various varieties of scientific glassware, scintillating crystals and liquids as well as special chemicals and gases

Where can YOU use these unusual Pn

Since their introduction less than two years ago,

Masoneilan 60000 Series Controllers have won wide acceptance
through superior performance, great versatility, and simplicity
of adjustment and operation. We believe that you, too, will like these



ual Pneumatic Controller Advantages?

tonsider versatility for example. In one instrument you can obtain all these...



ON-OFF CONTROL

simply by setting the Proportional Band Wheel to minimum propor-tional band — like + this. Action may be either direct or reverse.



DIFFERENTIAL GAP CONTROL

by turning the Proportional Band Wheel to the "Gap" quadrants, either direct action like

this or rection like this ->



PROPORTIONAL CONTROL

by setting the Proportional Band Wheel to the required propor-tional band in the direct action quadrant like + this or the reverse action quadrant like this →



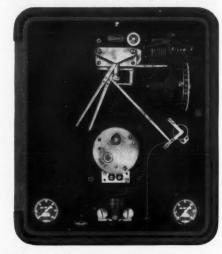
Reset Unit

Proportional Unit

PROPORTIONAL-RESET CONTROL

by substituting the Reset Unit for the Proportional Unit. No piping changes — you simply plug in the unit, realign (one adjustment), turn Proportional Band Wheel to desired direct or reverse action quadrant, and set required

Or if versatility is not important to you, consider these advantages to the Instrument Man-



PILOT — of amplifying, balanced type is easily serviced because of its simple construction and cleanable orifice.

MANIFOLDED AIR PASSAGES - with plug-in connections, eliminate pressure fittings and clutter of tubing; facilitate interchangeability of individual subassemblies and accessibility of

NOZZLE — is easily removed, cleaned, replaced and calibrated.

MINIMUM OF ADJUSTMENTS - with large knobs or wheels provided for making them; plus easily read scales to aid in settings.

SIMPLICITY - of unit subassemblies, and of their arrangement, for ease of adjustment and servicing.

If you have not already seen these controllers we suggest you arrange for a demonstration in your own office or plant. Simply write or telephone our office nearest you. It will help to solve your control problem.



1203 ADAMS STREET, BOSTON 24, MASS., U. S. A.

Sales Offices or Distributors in the Following Cities: New York . Syracuse . Chicago . St. Louis . Tulsa . Philadelphia . Houston Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Dallas • Seattle Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 1303 on handy form, pgs. 2-3

which are available from scientific supplier. Several photographs show various phases of manufacture of these items as well as the specialized equipment involved. Separate insert outlines details of "order-by-mail" system for purchase of glassware.

Form 1 is issued by Wakefield Industries, Inc., Dept. CP, 5108 W. Grove St., Skokie, Ill. When inquiring specify CP 1304, pages 2 and 3.

Non-destructive X-ray methods facilitate qualitative and quantitative analysis . . .

elements and compounds are analyzed rapidly and accurately by convenient method

Pertinent information of a qualitative or quantitative nature regarding various elements and compounds may be obtained by non-destructive X-ray analysis. Not only are these methods rapid, but they find application in numerous fields, including metallurgy, corrosion studies, petroleum refining, and organic and inorganic chemistry.

In practice, an intense beam of X-radiation is directed upon a small specimen from which secondary beams of the same radiation are reflected by the atomic structure of the material. Reflected rays are analyzed for intensity and angular position; this information is converted into qualitative and quantitative data concerning the constituents.

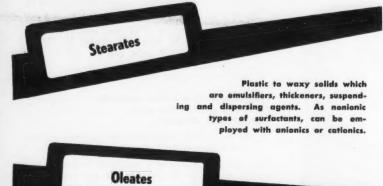
In X-ray fluorescence, induced radiations are directed upon an analyzing crystal (rock salt, mica, quartz or others), and intensities and angular positions are determined. Crystal separates various wavelengths representing the constituent elements.

Diffraction spectrometry, based upon the atomic arrangement of a material, gives information on crystal geometry and structure, patterns being representative of either elements or compounds. Fluorescence ascertains the elements present and gives amounts, whether they are free, combined, or both.

Where simple basic diffraction equipment must be procured or where specimens are minute, X-ray camera methods are applicable. On certain types of work, this is still a convenient method for obtaining data. For research work where highest accuracy is required and production where time is a factor and speed is essential, the spectrometer is recommended. Here a Geiger counter tube replaces the usual film and through proper electronic circuits, translates intensities and line spacings onto a strip chart in the form of a curve. This procedure eliminates certain difficulties normally encountered with the film technique. The latter unit can also be adapted for fluorescence analysis, a procedure not possible by ordinary camera technique.

(These and other factors of X-ray analysis as well as types of equipment and their uses are discussed in a report entitled "Twenty Questions and Answers on X-ray Analysis" by John E. Buhler, Engineer of the Research and Control Instruments Div., North American Philips Company, Inc., Dept. CP, 750 S. Fulton Ave., Mt. Vernon, N. Y. . . . check CP 1305, pages 2 and 3.)

POLYGLYCOL ESTERS



Auxiliary wetting properties, plus emulsification. Because of wide of compatibility with solvents and chemicals useful for insecticides and soluble oils.



In the past 25 years Glyco's product line has expanded from a few polyol derivatives to more than 100 synthetic organic chemicals which find application in almost every chemical process industry. Today we are operating a new plant at Williamsport, Pa.-containing the most modern equipment—from which we are bringing you more new products for your chemical needs. Watch for developments from

Send for your copy of our descriptive booklet "Esters by Glyco," containing application and property data on a wide range of products.



PRODUCTS CO., INC.

26C Court Street

Brooklyn 2, New York

emulsifiers, solubilizers.

When inquiring check CP 1306 on handy form, pgs. 2-3

FOR THE LABORATORY

Test chamber permits of conditions . . . use of wide range

designed to meet government test specifications

Permits accurate testing Uses: of materials and equipment under all externally imposed conditions of heat, cold, moisture, and vacuum.

Features: Heavy duty electronic control circuits with automatic safety interlocks assure fast, positive operation under laboratory as well as production testing programs.

Description: Multi-purpose environment test unit, Murphy & Miller Altitude Simulation Chamber, has a basic construction which is claimed to provide greatly increased insulating area and efficiency which permits installation and operating economies. According to manufacturer, unit uses less power and is lighter in weight.

Various accessories are available for use with unit, such as program heating, cooling and humidity cycles, with automatic recorder for controlling and integrating temperature, humidity and altitude. High capacity, low velocity two speed fan system is used to maintain uniform temperatures and conditions of extreme altitude.

(Product of Murphy & Miller, Inc., Dept. CP, 1322 S. Michigan Ave., Chicago, Ill. . . . or for more information check CP 1307 on handy form, pages 2 and 3.)

Fractional distillation equipment listed

Four-page, illustrated bulletin gives specifications for various items of fractional distillation equipment. Units described include perforated bubble-plate columns; packing-type columns, concentric tube column units; still heads and reflux condensers; solenoids; timers; feed sections and kettles.

Bul 4FE253 is issued by Glass Engineering Laboratories, Dept. CP, 525 O'Neill Ave., Belmont, Calif. When inquiring specify CP 1308 on handy form, pages two and three.



When inquiring check CP 1309 on handy form, pgs. 2-3

Swepco Corrosion-Resistant Pipe

in Schedules (40) MACHINE WELDED 3" TO 18" I.P.S.





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Check these vital features:

Available for Fast Delivery

Full penetration of weld Procedure A.S.M.E. Approved

Equal Wall Thicknesses

Better I.D. Tolerances



Through a new process, you can now obtain pipe in schedules 40 and 80 that is automatically welded by inert arc. Especially suitable for process industries, this new Swepco pipe has the advantages of equal wall thicknesses and better I.D. tolerances long recognized by many engineers in smaller diameter welded pipe.

Swepco pipe is available in stainless steel, monel, nickel, inconel, Carpenter "20," Hastelloy alloy, and alloy steels. All pipe is pickled and passivated-can be furnished annealed and in long lengths.

· Write for complete illustrated information to:

STAINLESS WELDED PRODUCTS, INC.

247 Cornelison Avenue Jersey City 2, N. J. Tel.: HEnderson 5-0123 Distributors in principal cities

When inquiring check CP 1310 on handy form, pgs. 2-3

Convertible Kjeldahl flask saves time-consuming transfers with removable neck



Removable neck, utilizing standard-taper joint, permits multipurpose use of flask and eliminates time-consuming transfer of digestion product prior to titrating the sample

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Uses: For normal wet-digestion methods utilizing regular Kjeldahl flasks. In addition, design permits use in several applications - refluxing and acetylations to name only two - previously made impractical by length of regular flask neck.

Features: Removable neck eliminates timeconsuming transfer of digestion product into titration vessel, with constant possibility of sample loss. Also, by removing neck entirely and in-

serting a reflux condenser with a standard taper joint, chemist can reflux prior to digestion. Powdered or viscous samples can be weighed and transferred directly from balance tare to flask's bulb without wrapping sample in filter paper to prevent adherence to flask neck

Description: Incorporating a removable neck which uses a standard-taper joint at its base, the Fisher-Rieman Kjeldahl flask solves the time-consuming problem of transfer of the digestion product before titration by allowing the chemist to titrate directly in the bulb of digestion flask. Previously, wet-digestion methods utilizing Kjeldahl flasks required that neck of the flask be long enough to allow refluxing of acids used in digestion. Hence, it was too long to fit under standard titration assemblies.

The multi-purpose flask, capacity 500 ml, is available in sets of bulb bottom and standard-taper neck, and bulb bottoms and necks are also available separately.

(Flasks are products of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 1311 on handy form, pages 2 and 3.)

Revised handbook covers chemistry and physics

Compiled and revised annually by 137 collaborating scientists, comprehensive reference provides useful information from many branches of chemistry and physics. Handbook consists of 2914 pages of useful tables, formulas, computations and analyses. Divided into 5 general sections, book also contains general index which gives an alphabetical listing to each subject.

To obtain the 34th edition of "Handbook of Chemistry and Physics" remit \$8.50 direct to Chemical Rubber Publishing Co., Dept. CP, 2310 Superior Ave., Cleveland 14, Ohio.

YOU CAN DETERMINE CARBON AND SULFUR CONTENTS IN A SINGLE OPERATION:

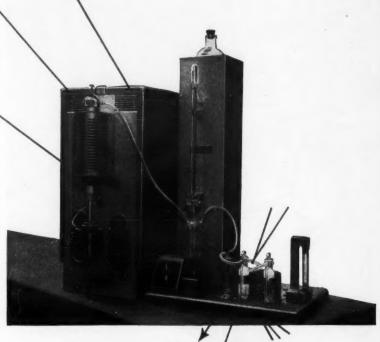
.. running time cut from 35 to 10 minutes

The days of running two separate tests to determine carbon and sulfur content of iron and steel are over. The Research Laboratories of Lindberg Engineering Company, with the cooperation of A. C. Holler, Twin City Testing & Engineering Laboratory and W. K. Aites of Westinghouse Airbrake Company have developed a new process utilizing a Lindberg high frequency combustion unit to test for both carbon and sulfur in a single operation . . and in a total of only 10 minutes!

This represents a time saving of 22 to 25 minutes over conventional methods that require a combined running time of 30 to 35 minutes . . (samples had to be heated in a resistance type furnace for 15 minutes to determine carbon content . . 20 minutes to determine sulfur content).

The Lindberg high frequency combustion unit used in this process is a rough and ready unit, designed and built by the makers of the famous Lindberg heat treating furnaces. It's engineered to heat samples at temperatures up to 3000°F... substantially higher than previously practical with resistance element furnaces.

If you already have your high frequency equipment, you'll want to adopt this time saving process immediately. If not, check with your nearest Lindberg Laboratory Equipment dealer for details on the Lindberg "HF" unit and this new time saving process.



Here's how the new procedure works:

1. Put 1 gram metallic sample of unknown in ceramic cupelet. 2. Add approximately ¼ gram fine mesh tin to accelerate action... and cover sample lightly with alundum to prevent splatter and minimize generation of iron oxide. 3. Place cupelet on induction unit pedestal, and raise to position in center of work coil, which surrounds a gas-tight "Vycor" glass tube. 4. Introduce controlled flow of oxygen which purges air from entire system and supports combustion. 5. Turn power from standby to plate position which sparts inductive heating... after 3 minutes, unit automatically switched from plate back to standby position. 6. Products of combusion flow for sulfur titration vessel where all SO₂ is absorbed. 7. Next, remaining products of combustion pass to sulis absorbed. 7. Next, remaining products of combustion pass to sulphuric acid tower and magnetium perchlorate bulb for drying . . and then to standard type gravimentic determination bulb containing ascarite.

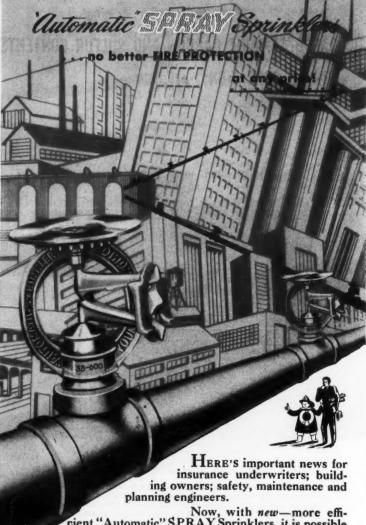
Now, to make the actual measurements:

- 1. Flush entire system for 3 minutes . . (then remove gravimetric de-
- termination bulb).
 2. Titrate to get specific color change to show end point.
 3. Read solution level (direct reading) to determine percentage of sulfur in sample.
- 4. Next, weigh absorption bulb to determine change in weight due to

LINDBERG LABORATORY EQUIPMENT DIVISION

Lindberg Engineering Company • 2480 West Hubbard Street • Chicago 12, Illinois

When inquiring check CP 1312 on handy form, pgs. 2-3



Now, with new—more efficient "Automatic" SPRAY Sprinklers, it is possible to obtain substantially improved fire protection at no extra cost. Leading insurance organizations consider them superior to conventional approved sprinklers. They are suggested for use on all new construction, and can easily be interchanged with obsolete devices on old style systems without expensive piping rearrangement.

In short, absolute fire safety with "Automatic" SPRAY Sprinklers is worth far more than it costs. It's a long-lasting value that knows no measure.

"Automatic" SPRAY Sprinklers, the most important advancement of the century in the science of fire protection. Fill out and mail the coupon below for illustrative literature.

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"Al	TOMATIC" SPRINKLER CORPORATION
	OF AMERICA
DEPT.	C Youngstown I, Ohio
	SEND US BULLETIN 69, "AUTOMATIC" SPRAY SPRINKLERS.
NAME	
TITLE.	C 4 17 - FAST STANDARD STANDAR
COMP	ANY
CITY	ZONE
STATE	

When inquiring check CP 1313 on handy form, pgs. 2-3

Convenient apparatus makes extractions automatically . . .

facilitates sample preparation and eliminates washings

Uses: For extraction and determination of salts of organic bases and acids. Can be applied to bulk products as well as pharmaceutical preparations.

Features: Replaces conventional methods which require a number of extractions of the liberated base or acid with immiscible solvents using separators, followed by titration in aqueous medium.

Description: The Schmall Apparatus for liquid-liquid extraction is available in two types — one for use with solvents lighter than water and the other for use with those heavier than water. When used in conjunction with titrations in non-aqueous solvents, transfers are eliminated and sharper endpoints are obtained. Unit may also be used for direct saponification and extraction without transfer.

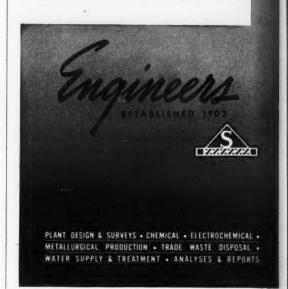
(Liquid-liquid extraction apparatus is manufactured by Scientific Glass Apparatus Co., Inc., Dept. CP, Bloomfield, N. J. . . . or for more information check CP 1314 on handy form, pages 2 and 3.)

Analyze Hg in conc's as low as 0.5 ppm

Described in 12-page report is a spectrochemical method for the determination of mercury in sodium or sodium-potassium alloy in concentrations as low as 0.5 ppm. The mercury is isolated from the sodium of NaK by amalgamation on copper powder in an acidified chloride solution. The dried powder is arced in a conventional DC arc, using a special electrode cap to insure reproducible volatilization of the mercury.

Analysis line used is Hg: 2536.5. No internal standard is used, and the accuracy of the method is approximately ±20% of the amount of mercury present. To obtain "The Determination of Mercury in NaK" remit 10c direct to the Office of Technical Services, U.S. Department of Commerce, Washington 25, D. C. Make check payable to Treasurer of the U.S.

J. E. SIRRINE CO. GREENVILLE . SOUTH CAROLINA



When inquiring check CP 1315 on handy form, pgs. 2-3

Pump Packing made of Du Pont TEFLON saves manufacturer \$870 in 27 months

Here is a typical case history of "Teflon" in process equipment. Consider how this plastic can save money and do a better job for you.

CONDITIONS: Centrifugal pump with V_8 " shaft, handling 98% sulfuric acid at 1750 rpm.



clus diffe the tand This

CONVENTIONAL PACKING "TEFLON"
cost per unit
service life
packing cost per month\$8.80\$.42
labor cost per month\$24.00\$.11
total cost per month
cost for 27 months\$886.00\$14.30
SAVINGS \$870

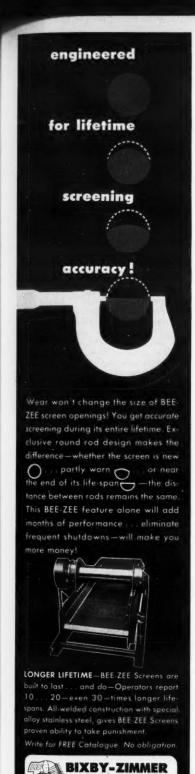
The Du Pont Polychemicals Department supplies "Teflon" in the forms of molding powder and aqueous dispersions. We'll gladly suggest names of processors of sheets, rods, tubes and finished parts. For full information, write: E. I. du Pont de Ne-

parts. For full information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 165 Du Pont Bldg., Wilmington 98, Delaware.

OU PONT

*Trade-mark for Du Pont tetrafluoroethylene resin BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

When inquiring check CP 1316 on handy form, pgs. 2-3



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Speeds analysis of paper strips in chromatography work

Uses: For determination of density not only on strips of filter paper in one-dimensional chromatography but also on large sheets which are required in the analysis of two dimensional chromatograms.

Features: Standard phototube allows measurements from red in the visible spectrum down to 360 m μ , and Type "B" search unit, which is interchangeable with standard search unit, has phototube with sensitivity that extends over medium and far-ultraviolet to 200 m μ . In addition, Type "E" search unit can be used on photometer portion of densitometer if measurements are to be carried out with narrow spectral bands in visible region above 650 m μ or in the near-infrared.

Description: The Photovolt Densitometer for filter-paper chromatography and paper electrophoresis, Model 525, comprises an electronic spot-photometer and a transmission density unit. The latter is equipped with a swinging arm of 12" throat, making it possible to reach any point of a sheet as wide as 24".

Sensitivity of instrument allows measurements to be made even in case of the heaviest filter papers, and it is not necessary to treat paper with oil to increase its translucence. Color filters for isolating narrow bands of the spectrum can be used with the unit, and a range of densities can be read with convenience. An accessory filter turret permits quick and convenient changing from one filter to another.

(Densitometer is a product of Photovolt Corp., Dept. CP, 95 Madison Ave., New York 16, N. Y. . . . or for more information check CP 1318 on convenient Reader Service slip between pages two and three.)

Provide complete identification of organic substances

Three types of units described in illustrated booklet provide a comprehensive method of identifying organic substances from their behaviour at different temperatures. In addition to allowing observation of seven different physical phenomena connected with this identification procedure, units also perform thermal analyses and allow delineation of phase diagrams as well as being useful for analyses of two component mixtures.

Instruments described include a hot and cooling stage microscope, hot and cooling stages for microscopic observation of substances at controlled temperatures, and hot benches for convenient determination of melting points.

"Kofler Thermo Apparatus" is available from William J. Hacker & Co., Inc., Dept. CP, 82 Beaver St., New York 5, N. Y. When inquiring reader may simply specify CP 1319 on convenient Reader Service slip between pages two and three.



When inquiring check CP 1320 on handy form, pgs. 2-3

Engineering Co.

753 Abingdon St., Galesburg, III.

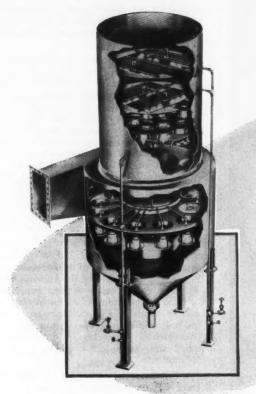
BEE-ZEE SCREENS CAN BE FITTED

TO ANY SCREENING EQUIPMENT

When inquiring check CP 1317

on handy form, pgs. 2-3





Interior of wet scrubber. Dustladen gas enters tangentially through duct at left, and goes down through individual scrubber throats, hitting wetted impinger plates as it leaves throats. After expanding into lower chamber, it reverses up through center stack which leads to another expansion chamber and more scrubber throats and wetted impinger plates. Final cleaning is done by separators at top, which are sprayed with special wetting agent Mu

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Dust Loads in Asphalt Plant Stack Gas Yield to Efficient Wet Scrubbing

Scrubber is used also on exhausts from process equipment, has average draft loss of 2" water, and needs only 2 gal water per 1000 cu ft gas

USES: Removing dust from stack gases, and from exhaust of rotary dryers, cyclones, kilns, roasters, mixers, and pulverizers.

Features: Capable of removing high dust loadings such as those found in asphalt plant stack gases. Requires only about 2 gal of water, at 40 to 50 psi, for each 1000 cu ft of gas to be scrubbed. In cases where water supply is a problem, some water can be recirculated after clarification. Average draft loss is about 2" water.

Each unit is built in two or more sections for ease in moving from one location to another. Connection to existing duct work is made without complicated piping. Special metal linings can be used with corrosives.



Throughout the

Chemical Industry
Aerofin units do the job
Better, Faster, Cheaper

AEROFIN CORPORATION 410 South Geddes St. Syracuse 1, N. Y.

Aerofin is sold only by manufacturers of nationally advertised fan system apparatus. List on request.

When inquiring check CP 1321 on handy form, pgs. 2-3

Description: The LP (Liquid Precipitator) Multiple-Action Scrubber, Type V, is built in capacities from 1500 to 48,000 cfm. They range in height from 14' 10" to 32' 10", are fabricated of electrically welded \(\frac{1}{2}\)'' steel plate, and have gasketed and hinged inspection doors. Companion flanges for both air inlet and sludge discharge connections are provided.

As dust-laden gas or air enters the scrubber, larger particles are separated out by centrifugal force. At the same time, the gases are subjected to some pre-cooling. The large volume of gas is divided up into many smaller volumes by passage through multiple scrubber throats. This increases the linear velocity of the gas so that entrained solids hit impinger plates hard as they leave the throats. A high-velocity jet of water also hits each plate, and breaks up into fine droplets which provide efficient scrubbing action.

Then the gases expand into a lower expansion chamber, and the bulk of the solids is discharged in the form of a slurry at lower drainage outlet.

After that, the gas flow is reversed to flow up through the center stack. Part of the wetted solids are removed here by inertial separation. From the stack, the gases enter another expansion chamber which reduces their velocity once more.

The gases again go through a set of scrubber throats and impingement plates, and then move into another expansion chamber, thus repeating the principles outlined above. The repeated expansion and contraction is important for complete precipitation. Additional scrubbing stages may be provided for further precipitation of sub-micron sizes.

Final cleaning is accomplished by grid precipitator elements at top of the unit. A proportioning device is provided to supply a spray of diluted "Compound M" to the elements. This solution rapidly wets dust which ordinarily repels water, and assures final removal of low-micron particle sizes. It also speeds water clarification in the sludge pond or settling tank by causing the solids to sink more rapidly.

(LP scrubbers are made by Johnson-March Corporation, Dept. CP, Philadelphia, Pa. . . . or for more data check CP 1322 on form, pages 2 and 3.)

Bulletin tells uses of grinding mills

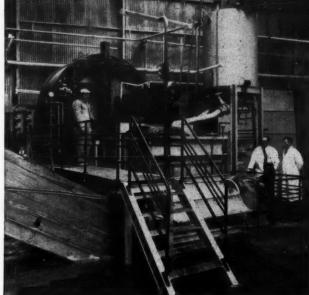
Six-page, two-color illustrated bulletin briefly describes manufacturer's complete line of grinding mills, and points out where they should be used, and why. Cutaway views and installation photographs are shown for conical and tapered-barrel (Tricone) ball mills, rod mills, cylindrical mills, tube mills, and batch mills, as well as Thermomills (combination of mill, classifier and heater).

Also included is list of materials successfully ground in the mills and a description of accessories for use with mills. Bul AH-440 is issued by Hardinge Company, Incorporated, Dept. CP, 240 Arch St., York, Pa. When inquiring specify CP 1323 on handy form, pages 2 and 3.

Read these Production Figures on Slow-Draining Materials



One 79" Reineveld Centrifuge dewaters Maize Starch to 30% TOTAL MOISTURE at the rate of 165 TONS PER DAY



The production figures shown here come directly from the plant of a leading European starch producer where two Reineveld Centrifuges are in continuous 24 hour-perday service.

This company purchased a 79" Reineveld Centrifuge in 1951 after receiving outstanding performance for 16 years from a 67" Reineveld machine.

Both Reineveld Centrifuges now operating in this plant are dewatering substantially more Maize Starch than they were guaranteed to do when originally installed.

If you have a difficult problem with a Slow-Draining Material . . .

CALL ON THE REINEVELD-HEYL & PATTERSON TEAM TO HELP YOU

Reineveld's vast experience in the processing of slow-draining, difficult-filtering materials, combined with Heyl & Patterson laboratory facilities, can provide the answer to many of your difficult processing problems.

Heyl & Patterson laboratory facilities and testing machine are available without charge or obligation to help you determine the value of a centrifuge for your particular application.

For full information-write for booklet 11-RC-2.



SING

HOW TO GET THE MOST FOR YOUR MONEY IN VACUUM FILTRATION



LABORATORY FILTER SERVICE



ENGINEERED FILTER DESIGN



EXPERIENCED FILTER CONSTRUCTION

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THE EIMCO CORPORATION

The World's Leading Manutasturer of Vacuum Filtration Equipment EXECUTIVE OFFICES AND FACTORIES - SAIT LAKE CITY 10. UTAH. U. S. A.

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NEW YORK, 51-32 SOUTH STREET . CHICAGO 3319 SOUTH WALLACE STREET BIRMINGHAM, ALA, 3140 FAYETTE AVE . DULUTH, MINN, 216 E SUPERIOR ST. EL PASO, TEXAS, MILLS BUILDING . BERKELEY CALIF. 537 CEARS STREET KELLOGG IDAHO, 307 DIVISION ST. . LONDON W. 1. ENGLAND, 190 PICCADILLY

IN FRANCE SOCIETE EIMCO, PARIS, FRANCE IN ENGLAND EIMCO (GREA) BRITAIN) LTD. LEEDS 12, ENGLAND IN ITALY, EIMCO ITALIA, 5 P.A., MILAN, ITALY There are 5 basic requirements that should be considered.

- The product to be filtered should have the benefit of competent Laboratory or Pilot Plant test work;
- Careful study of the determinations made in the test work and a selection from these facts of the proper filter as to type and size;
- Picking a manufacturer with the experience and Engineering ability for proper design;
- Securing your filter from a manufacturer whose facilities for production are adequate to meet all requirements;
- Picking a manufacturer with a trained and experienced service organization to make sure that the final installation meets the results which the test work indicated.

The selection of an EIMCO Filter will enable you to meet all of these basic conditions four-square:

- Our Testing Laboratory is one of the best in the industry, not only from the standpoint of facilities, but capable personnel as well;
- Our Sales Engineers with the benefit of thousands of installations in every type of metallurgical and processing industry are able to make an informed selection based on laboratory determinations as to the proper type and size;
- Our Engineering Department is composed of well-informed designers and detailers with a world of field experience so essential in securing fool-proof, rugged design;
- Our manufacturing facilities are by far the finest in the industry — almost half a million square feet of floor space with every needed modern tool to insure good, dependable construction:
- Our Service organization consists of hard working Engineers and Mechanics who have a pride in their product and an all-around process training.

PROCESSING

Immersion heater has low heat density . . .

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Uses: Designed for heating baths containing alkaline solutions and copper cyanide plating solutions. Can also be used in vapor degreasers and for heating brass, bronze, cadmium, gold, and silver plating baths.

Features: Low heat density protects both heater and liquids from damage due to carbonization or "frying." Sealed, vapor-proof, UL-approved junction box prevents entrance of liquids and vapors.

Description: Glorod heavy-duty Series W immersion heaters are available as dual voltage (230 and 460), single phase units in capacities of 1000, 2000, 3000, 4000, 6000 and 10,000 watts. Overall lengths range from 14 to 70". Standard sheath is steel, but brass or stainless steel can be furnished. Nickel alloy resistance element is covered by a quartz body.

Units can be mounted quickly on the edge of the tank or, as in the case of vapor degreasers, may be screwed into 2" threaded holes in the bottom of the tank.

(Made by Cleveland Process Company, Dept. CP, 7016 Euclid Ave., Cleveland 3, Ohio . . . check CP 1325 on form, pages 2 and 3.)

Demineralizer operates automatically

Two-page, two-color catalog sheet describes mono-bed demineralizer which operates under automatic control, including the regeneration cycle. Photo and schematic drawing point out the various parts of the unit. In addition, sheet gives detailed description of parts, sample specifications, and typical performance data.

MA Model Catalog Sheet is issued by Penfield Manufacturing Co., Inc., Dept. CP, 19 High School Ave., Meriden, Conn. When inquiring specify CP 1326, pages 2 and 3.

For more information on product at left, specify CP 1327
. . . see information request blank between pages 2-3.



Ease of cleaning distinguishes non-electric hopper magnet

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Designed to remove iron contamination Uses: from many free-flowing materials wherein the presence of ferrous particles is undesirable.

For ease of cleaning, entire unit is merely lifted from hopper and metal contamination wiped off with a cloth or blown with compressed air.

Hopper unit consists of a series of Description: steel discs spaced at 1" centers with cylindrical shaped, powerful Alnico V permanent magnets occupying spaces between discs. Steel discs serve as



Requires only periodic cleaning

pole plates for magnets, and are designed to cause symmetrical and efficient distribution of magnetic field over the most effective areas.

Originally developed for hoppers with sloping sides, unit can be used in other locations with proper supports. It will perform in either wood or steel hoppers. Magnetic separator can be easily lowered into a hopper so that steel discs rest on two sides of the hopper. End discs will contact other two sides, providing a magnetic barrier covering entire hopper discharge opening. Material flowing into hopper passes between discs. Non-magnetic material passes freely, but the tramp iron is trapped.

(Manufactured by Eriez Manufacturing Co., Dept. CP, 1945 Grove Dr., Erie, Pa. . . . or for more information check CP 1328 on handy form, pages 2 & 3.)

Pictures French refinery

Sixteen-page brochure gives general photographic picture of petroleum refinery at Dunkirk, France, which processes 40,000 barrels of crude daily.

"Lummus At Dunkirk" is issued by The Lummus Co., Dept. CP, 385 Madison Ave., New York 17, N. Y. When inquiring specify CP 1329 on handy form, pages 2 and 3.



A 500 gallon, 1875 PSI Autoclave designed and built by Blaw-Knox for processing an additive for aviation gasoline.

Time and expense are saved, doubts and experiments eliminated when you turn your Process Equipment problems over to Blaw-Knox. Long experience in both design and fabrication assures your autoclave or other reaction vessel of high performance, maximum safety and ruggedness for long service. Working from clients' drawings or our own designs Blaw-Knox Equipment Division has built highly successful autoclaves for:

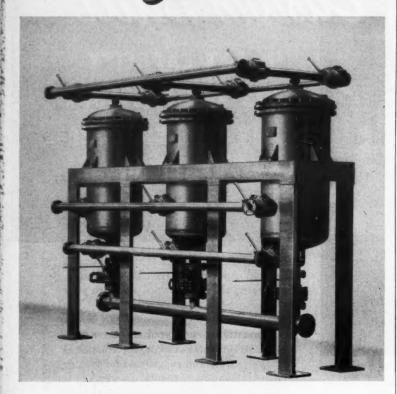
ESTERIFICATION - Production of esters through alcohol-acid reactions ... POLYMERIZA-TION—Reactions involving the addition or agglomeration of molecules to increase molecular weight... SULFONATION—Reactions with organic compounds employing the sulfonic acid group... ORGANIC SYNTHESIS -- Combination, reaction, or mixing of various organics... NITRATION—Chemical reactions involving combination or treatment with the nitro group ... HYDROGENATION-Reactions of combination or reduction with hydrogen...ALSO: Ammonolysis . . . Emulsification . . . Impregnation . . . Halogenation . . . Crystallization . . . Sublimation . . . General High Pressure Processing, Etc.



When inquiring check CP 1330 on handy form, pgs. 2-3

ADAMS

Molten Sulfur FILTERS



UPGRADE YOUR RAW SULFUR

CUT ACID PRODUCTION COSTS

Pioneers in the filtration of molten sulfur, the R. P. Adams Co. now offers the widely tested and approved Poro-Carbon filters in complete, packaged plants. You are invited to write for details in addition to the following salient features.

- Cleaned by backwashing without disassembly
- Filters, piping and valves steam jacketed
- Includes filter aid feed and sulfur pump
- Permanent, inert Poro-Carbon filter media
- Extend catalyst effectiveness in acid production

BUFFALO 17, NEW YORK

When inquiring check CP 1331 on handy form, pgs. 2-3

PROCESSING

Corrosives are safe in unplasticized PVC tanks . . .

lightweight vessels are strong and self-supporting

Uses: Tanks for holding corrosive solutions. Resist most mineral acids, alkalis, inorganic salts, and a large number of organic compounds, up to 170°F.

Features: Made throughout, including inlets and outlets and standard flanged fittings, of corro-



Unplasticized PVC tank

sion resistant unplasticized polyvinyl chloride. Said to be lightweight but structurally strong.

Agilide tanks are Description: mainly of welded construction and are entirely self-supporting. They are built to specifications.

(Made by American Agile Corporation, Dept. CP, PO Box 168, Bedford, Ohio . . . or for more information check CP 1332 on handy form, pages 2 and 3.)

1/8 to 2" capacity offered in spiral reamer

Fast, easy, clean reaming is featured by spiral reamer described in three-color data sheet. Reamer has capacity range from 1/8 inch to 2 inches. Equipped with a reversible ratchet, it cuts holes in sheet metal smoothly - with no chatter.

Form R-8-B is available from The Ridge Tool Co., Dept. CP, Elyria, Ohio. When inquiring specify CP 1333 on handy form, pages 2 and 3.

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You Can Cut Your Costs with the KING-GAGE

WITH the King-Gage, you can maintain cost-saving close control of inventories, processing, formulating. You can avoid contamination and inaccuracies due to manual measurement-reduce fire hazard and danger to personnel. And you can save time. Here's why:

The King-Gage measures any liquid, by weight, volume or depth — in any type of tank or vessel. It's read at a glance, and can be located for distant reading — wherever most convenient. It's accurate; dependable; works as a frictionless balance. Can be used with positive-seal pressure transmitter between gage and liquid measured.

These and other King-Gage advantages are paying off for hundreds of chemical processing plants. They can do the same for you. Investigate!

FREE KING-GAGE BULLETIN gives full details; shows typical applications. WRITE TODAY!

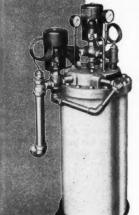


Ann Arbor, Mich. SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

When inquiring check CP 1334 on handy form, pgs. 2-3

Abundant Hot

from One Compact Heater



Get abundant washroom water regulated at a safe 120° F., or water direct from tank simultaneously for scalding purposes at 160° F. to 180° F.

A "package" unit especially designed to afford uncommon safety and high efficiency. It is delivered completely assembled, tested and adjusted. Simply attach pipes, then turn on water and steam.

The latest development in a compact heater of high quality for industry and institutions.

Write for literature



THE COE MANUFACTURING COMPANY 503 BANK ST. , PAINESVILLE, OHIO

When inquiring check CP 1335 on handy form, pgs. 2-3

Aluminum reduces weight of blow ring carrier by fifty per cent . . .

two-sectional blow rings are automatically self-adjusting and self-aligning

Uses: For cleaning dust collector bags without removing them from collector.

Features: Use of aluminum in place of steel welded fabrication for blow ring carrier reduces weight by more than 50%. Because of weight reduction, whole carrier is said to react more quickly to vertical travel cleaning function and to bag contour and alignment action. Motor size and power requirements are also reduced.

Blow rings are automatically self-adjusting to variations in filter bag diameter. In addition, entire carrier assembly is so mounted that it floats laterally to accommodate vertical alignment of filter bags under all conditions. This automatic self-adjusting and self-aligning feature eliminates unnecessary chafing or wear along surface of bag.

Description: Cast aluminum carrier is made up of hollow sections bolted together. High pressure air, for reverse-air-jet cleaning action, is fed through the hollow casting, up flexible tubes into each blow ring. Method insures an even and abundant supply of high pressure air at all times.

Self-adjusting blow ring is made in two half sections. Each half section is mounted on carrier by two flexible rubber tubes. Thus, despite dimensional changes

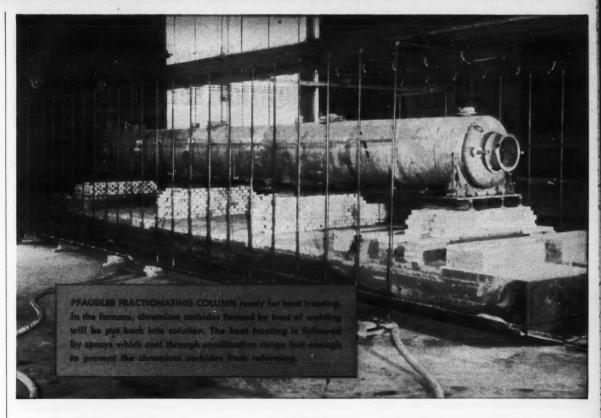


Self-adjusting design of blow rings eliminates chafing and wear on bags

due to filter bag shrinking or stretching, each blow ring is held snugly in contact with the felt surface. Movement and air jet action of rings combine to dislodge dust accumulated inside bag. Dust then falls and drops into regular collection hopper.

(Product of Turner and Haws Engineering Co., Inc., Dept. CP, 87 Gardner St., Boston, Mass. . . . or for more information check CP 1336 on handy form, pages 2 and 3.)

Handy Nomograph on page 208 provides quick solution to size of horizontal cylindrical process tanks.



Putting the heat on alloy corrosion problems

Pfaudler's extensive heat-treating facilities permit application of non-critical alloys to chemical processing equipment for highly corrosive services

Unstabilized stainless steels—when properly heat treated—can replace the more critical stabilized stainless steels for many chemical processing uses.

Columbium and titanium have been commonly used as stabilizing agents to overcome the decrease in chemical resistivity found in the heat affected areas of welded, unstabilized stainless steels. This decrease is caused by carbide precipitation during welding.

Proper heat treatment of the unstabilized 300 series stainless steels, however, can restore the chemical resistivity of fabricated equipment for chemical service.. to a degree equivalent or superior to that obtained with the stabilized materials which are now critically short. And the heat-treating method is generally more economical.

PFAUDLER—with more than 25 years experience in fabricating corrosion

resistant equipment from virtually all metals and their alloys, and with unique furnace facilities for fusing glass to steel—is ideally equipped for heat treating stainless steel. Pfaudler furnaces are large enough to handle equipment up to 12' 6" in diameter and 45' 6" in length.

What is your corrosion problem? As corrosion engineers, Pfaudler is prepared to make an *impartial* analysis of your requirements . . . and recommendations to meet your needs economically.

For the full story on heat treating stainless steel processing equipment, write us for a copy of "Preventing Intergranular Corrosion Due to Welding Stainless"—reprinted from the March, 1952 issue of Chemical Engineering.

Pfaudler

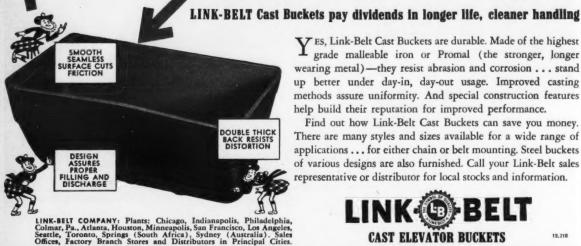
THE PFAUDLER CO. ROCHESTER 3, N. Y.

Engineers and fabricators of corrosion resistant process equipment

GLASS-LINED STEEL + HASTELLOY + ALUMINUM + TANTALUM + CARBON STEEL + SOLID OR CLAD STAINLESS STEEL + NICKEL + INCONEL + MONEL

When inquiring check CP 1337 on handy form, pgs. 2-3

Here are buckets tailored for rough, tough elevator service



 $\mathbf{Y}_{ ext{grade}}^{ ext{ES, Link-Belt Cast Buckets}}$ are durable. Made of the highest grade malleable iron or Promal (the stronger, longer wearing metal)-they resist abrasion and corrosion . . . stand up better under day-in, day-out usage. Improved casting methods assure uniformity. And special construction features

Find out how Link-Belt Cast Buckets can save you money. There are many styles and sizes available for a wide range of applications . . . for either chain or belt mounting. Steel buckets of various designs are also furnished. Call your Link-Belt sales representative or distributor for local stocks and information.



When inquiring check CP 1338 on handy form, pgs. 2-3



When you select Ply products to protect your employees from the hazards of industrial processing, you have the satisfaction of knowing you have purchased the very best!

For over 20 years Ply products have been used and proven successful by the nation's leading industrial plants. If you're not already using Ply products, it's time to get the facts now!



PLY-GARB clothing is now available in plastic woven materials that assure complete protection, long wear and comfort.



PLY-GLOVS will protect your workers hands from water, acid, caustics, petroleum—and all chemicals except M.E.K. solvents. Cotton based, they're dipped with our special plastic formula that guarantees long life—will outwear 10 pairs of otton gloves or 4 pairs of syn-hetic rubber.

WRITE FOR DETAILS TODAY!

THE MILBURN COMPANY, Detroit 7, Michigan

When inquiring check CP 1339 on handy form, pgs. 2-3

Briefs .

Mechanical applications of flowed-in gaskets

Author comments on the customary gasket formation and installation. States some troubles which arise, and how they are eliminated by using the flowed-in gasket. Materials for gaskets are discussed from points of properties they must possess. Article states those possessing these properties. Describes a procedure for gasket production and enumerates some applications. 4 pages, 1 table, 3 figures. ("Rubber Age," January 1953,

Solvent extraction of cottonseed

Author comments on the uniqueness of the cottonseed and the resulting problems in solvent extraction. States that there are three distinct, commercially proven methods for solvent extraction of cottonseed. Comments on them. Mentions some processes which, having passed the laboratory stage, will be tried out commercially this season. The article tabulates comparative costs and comparative product quality for three types of plant. 21/2 pages, 2 figures, 2 tables. ("Journal of American Oil Chemists," February 1953, page fifty-six.)

Polymerization of methyl methacrylate

Effect of water on induction period. Authors describe the preparation of the monomer used in these experiments and state refractive index, density, acid and water content. Experimental procedure in determining effect of added water is described. Polymerization measured by flow time. Conclusions as to effect of added water are stated. 5 pages, 8 figures, 4 tables. ("Journal of Research National Bureau of Standards," December 1952, page 359)

Sulfe

Steam

inhib

The cyclone as a separating tool in mineral dressing

(Equipment is so new that the name is not yet standardized: sometimes hydraulic cone, dorrclone etc.) Paper discusses the development of cyclones using heavy suspensions for mineral separations. Lists the variables which have been investigated. Comments on the relation between size of the

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . as selected by Technical Editorial Director, Harry McCormack

cyclone and particle size which can be separated. Some typical results obtained in test work are tabulated. 5 pages, 1 figure. ("Transaction of the Institution of Chemical Engineers—London, Vol. 30," page 87)

Fungicide formulation

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Problems pertaining to spray formulations, uniform mixing, characteristics of diluent and percentage and particle size of mixture are reviewed. Dusts are commented on as to 14 factors. Ten requirements which must be met by finished formulation are stated in the article. Five pages. ("Agricultural Chemicals," February 1953, page forty-two.)

Refining sugar cane wax

Author calls attention to the various applications for which these waxes may be suited. Waxes is the correct term for the raw material, has been found to vary considerably depending on locality where cane is grown. A refining method is described which may be varied to produce finished wax of desired purity and melting point. 3 pages. ("International Sugar Journal," 7 and 8 Idol Lane, London, January 1953, page 10)

Sulfur recovery plant

Author describes a Mexican plant recovering sulfur from sour natural gas. Quantity of gas treated and amount of sulfur recovered is stated. Reactions involved are commented on. Unusual handling of sulfur is described. Purity of sulfur reported 99.9 per cent or better. Two pages, five photographs. ("Petroleum Refiner," February 1953, page 95.)

Steam condensate corrosion inhibitors

A laboratory method for studying them. Technique of study stated. Schematic drawing of test equipment included. Graphs show influence of several inhibitors on steel corrosion rates. 6 pages, 12 figures. ("Corrosion," January 1953, page 19)



JACKSON & CHURCH PULP PRESS

... MAKES THE MOST OF YOUR PRODUCT!

There's a reason for the high pressing efficiency of the J-C Pulp Press. An important feature of every J-C Pulp Press is an arrangement of ingeniously constructed flights on a tapered, screw-type spindle. The slurry is prevented from rotating with the spindle by retarding resistors, while constant pressure is maintained by the fully automatic "Floating Cone," exclusive with J-C Presses.

J-C Pulp Presses are stepping up profits by single or multi-stage extraction in many fields such as viscose, rubber, tobacco, paper pulp, pharmaceuticals, corn starch and glue.

For application to individual problems, please write Dept. CP

patents applied for

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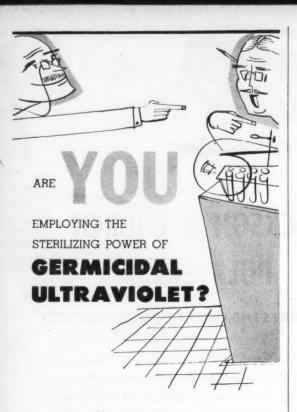


- 1. Vertical press requires less floor space
- 2. High recovery rate in separating liquids from solids or solids from pulp
- 3. Continuous process instead of batch
- 4. Greatly reduces drying costs
- 5. High yield of marketable by-products
- 6. Aids in solution of stream pollution problems



JACKSON & CHURCH COMPANY, SAGINAW, MICHIGAN WORK WELL BONE SINCE '81

When inquiring check CP 1340 on handy form, pgs. 2-3



HANOUIA SAFE-T-AIRE

PROVIDE CONSTANT AIR DISINFECTION OF STERILE TECHNIQUE AREAS

The need to achieve and maintain highest possible degrees of sterility has become urgent in increasingly numerous activities in the fields of research, chemistry draw manufacturing

istry, drug manufacturing and packaging. This is being successfully accomplished by Hanovia Safe-T-Aire Germicidal Ultraviolet Lamps in these and other fields. Such widespread use (plus Hanovia's world-famous reputation) is reliable proof of the effectiveness of this equipment. Hanovia's new U/L approved explosion-proof units assure complete safety in hazardous areas, too.

It will pay you to consult with **Hanevia** about any application mentioned here or your own special or particular need in air decontamination. Address Dept. L-5.

STERLIZE
THE AIR IN

BULK MILLING
AREAS
AREAS
STERILE TRANSFER
HOODS
AIR LOCKS
CUBICLES
AIR LAZARDOUS
AREAS

CHEMICAL & MFG. CO. NEWARK 5, NEW JERSEY

When inquiring check CP 1341 on handy form, pgs. 2-3







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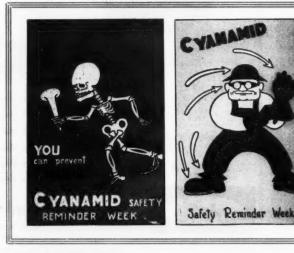
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The posters shown here were used on bulletin boards of company's 42 plants to illustrate various themes of "Safety Reminder Week"

Safety Week Serves as Springboard to Improve Company's Record

Special program in 42 plants spotlights these separately on each of six days: housekeeping, fire safety, personal protective equipment, safe practices and conditions, off the job safety, and year-around safety



PROGRAM designed to pro-A mote safety intensively for one week and to use the interest thereby engendered as a starting point for further improvement is American Cyanamid Co.'s "Safety Reminder Week" plan. It was held during the week of November 3-8, 1952 in the company's 42 plants. On each of six days, a different aspect of safety was highlighted. Additionally, however, it was stressed in all phases of the activities that safety is an every-day and everyweek affair and that efforts were not to be relaxed upon conclusion of the special week.

The schedule suggested by this company's Central Safety Committee and adhered to by each of the operating plants, with one



exception, follows in general outline. The exception was their Brewster, Fla., plant which set aside one week instead of one day, for each of the six safety themes.

DAILY PROGRAMS

Ist Day—Housekeeping. 1) Safety rally talk by plant manager to all employes to "kick off" the week's program; 2) housekeeping inspection of each department by department group; 3) supervisor safety tour of his department, covering safety only and with special emphasis on methods for improving housekeeping; 4) demonstrations and displays.

A display suggestion was the posting of enlarged "before and after" photos of plant and yard locations which had been converted from typical examples of poor housekeeping to neat and clean areas.

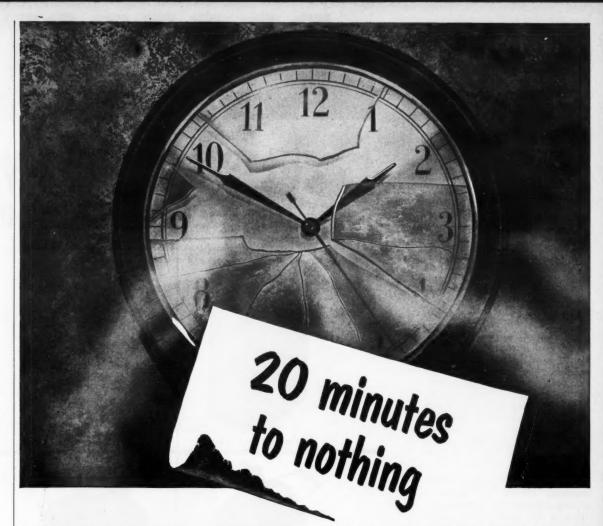
2nd Day—Fire Safety. Same general procedure with respect to inspections and tours as in preceding, except with emphasis, of course, on fire prevention and protection. Among demonstrations suggested were:
—large board diagrams showing method of fire alarm operation, from pull-box to audible signal; dust explosion using small box with paper diaphragm, dust receptacle, blow tube, and ignition source; spontaneous ignition of rags impregnated with linseed oil or other readily oxidizable liquids; and fire starting in shallow pan containing flammable liquid by molten metal globules emanating from nearby cutting torch.

3rd Day—Personal Protective Equipment. Inspections and tours with stress on adequacy, use, and condition of protective equipment assigned to employes. Display suggestions:

A beam or sledge hammer mounted to pound on toe of standard safety shoe. Helve can be pivoted and arranged for manual dropping or tripping of hammer by employes who want to see how much the toe can "take".

Drop-weight arrangement, manually operated, to show strength of standard hard hat.

(Continued on page 152)



You could know the plant...20 years of steady growth ...20 years of work, brains and money...then in 20 minutes a little fire got away and reduced it all to nothing.

But, your larger size fire hazards can be protected very efficiently at a reasonable cost, thanks to C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area...to flammable liquids, electrical equipment, storage spaces, manufacturing processes and record vaults. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Flexibility is the keynote with these C-O-TWO Fire Extinguishing Systems . . . the low pressure carbon dioxide

storage tanks range in capacities from one to fifty tons... discharge facilities can either be manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these... especially installed to fit your particular needs. Future plant expansion is easily and economically provided for by initially installing an oversized low pressure carbon dioxide storage tank and adding the supplementary discharge facilities at a later date.

Whether it's fire detecting or fire extinguishing ... portables or built-in systems ... C-O-TWO means experienced engineering that assures you of the best type equipment for the particular fire hazard concerned.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today . . . our extensive experience over the years is at your disposal without obligation. Get the facts now!



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers Dry Chemical Type Fire Extinguishers Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems Built-In Smoke and Heat Fire Detecting Systems

C-O-TWO FIRE EQUIPMENT COMPANY NEWARK 1 · NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. . TORONTO 8 . ONTARIO

Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

When inquiring check CP 1342 on handy form, pgs. 2-3

147

SING

Win first competition for safety designs on match covers . . .

awarded prizes among employes to stimulate interest

Cover designs on book matches used by Titanium Division of National Lead Co. to promote safety were adjudged grand prize winner in first annual contest of its kind sponsored by the match industry. Award garnered is called the Joshua Award after Joshua Pusey who invented these matches 60 years ago.

Winning entry, among 1989 in 43 different classifications, consisted of a series of six covers. Typical of the messages carried on the front (a) and back (b) cover of the same book are the following: (a) "Which valve? If you're not sure - ask! (b) Common sense prevents accidents; (a) The emergency safety showers are for your protection — use 'em! (b) For chemical splashes use plenty of water - get first aid; (a) For your safety keep all machine guards in place (b) Think! and (a) Soda acid? CO₂? Foam? Carbon 'Tet'? For your safety know which type extinguisher to use (b) know where all fire extinguishers are located in your department."

In addition to the above safety messages, interest was generated among employes by printing one letter of the word "safety" under the stapled base of each match book. Any employe who collected a complete set of letters received a prize from the Safety Department of National Lead. Among prizes thus distributed have been cigarette lighters, cartons of cigarettes, firstaid kits, tool kits and safety shoes.

(Information courtesy of National Lead Co., Titanium Division, Dept. CP, Carondelet Station, St. Louis 11, Missouri.)

Warns personnel of radioactivity by glarm bell . . .

registers 0-2000, 0-10,000 and 0-20,000 counts/min

A mobile unit for de-Uses: tecting, recording and indicating the presence of radioactive materials in the air. If dangerous amounts are found, personnel in the area are warned by an alarm bell and flashing lights.

2 ROTECTOSEA

PROTECTS against explosion and fire... SEALS against evaporation

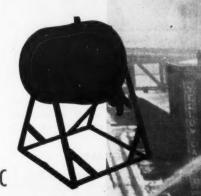
APPROVED LABORATORY AND PLANT SAFETY PRODUCTS for Flammable



LABORATORY SHELF CAN



LABORATORY CAN WITH BOTTOM FAUCET



LABORATORY CAN WITH TILT



SAFETY CAN



LABORATORY DISPOSAL CAN



A LABORATORY SHELF CAM. New space-saving oval shape for greater ease in handling; permits placing four cans in the same space formerly required for three. Easily grasped and used with one hand. Double-wall fire baffle in spout. Self-closing cap seals against evaporation; provides pressure relief.

B LABORATORY CAN WITH BOTTOM

FAUCET. Equipped with perforated-metal fire baffles at faucet and filler openings. Openings have self-closing, spring-action closures. Shock rim at bottom elevates faucet for convenient use.

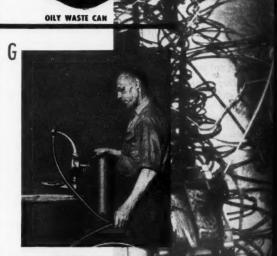
C LABORATORY CAN WITH TILT

FRAME. An extra safe and conreases. An extra sace and con-venient dispenser for accurate, drip-less pouring. Easily tilted; returns to upright position upon release. Faucet and filler openings have perforated-metal fire baffles and self-closing, spring action closures. D SAFETY CAN. Double concentric fire baffle inside base of spout. Spring loaded cap makes tight clo-sure; provides pressure relief. Squeeze grip handle for controlled pouring.

E LABORATORY DISPOSAL CAN. Wide 3%" inside diameter spout permits easy use without a funnel; perforated-netal fiame arrester at base of spout. Self-closing cap provides uniform sealing with pressure relief.

F OILY WASTE CAN. Tight, seam-welded body with snug fitting cover which closes automatically to smother free. Cover opens wide with slight foot pressure on full width treadle.

G TRANSFER PUMP. Provides complete protection in transfering flammable liquids. Three flame arresters: at spout, above bung adapter and at strainer inlet within the drum. Light-weight, aluminum alloy; brass telescopic tube.



TRANSFER PUMP

PROTECT SEAL

ROTECTS against explosion and fire...SEALS against evaporation

FLAMMABLE BULK STORAGE SAFETY DEVICES

PROTECTOSEAL designs and builds a wide variety of equipment for the safe and economical handling of hazardous liquids in storage. These include conservation vents, flame arrester vents, fill and vent units for inside and outside storage, as well as safety tank car loaders and unloaders, and other similar large volume safety storage products. Illustrated is a representative selection of commonly used items; for complete information use the coupon to request catalog.

CONSERVATION VENTS AND FLAME ARRESTERS

provide parameters acuum relief, and breathing is retarded sufficiently to reduce vaporation but not to the extent that tank structure and angered. Flame arresters prevent the passage of flame to tank interiors even when there is a prolonged burning and flas has tests on these vents have been passed as control of the parameters. Laboratories are Assemble Factory Mutuals Laboratories. All almis are construction.



vent inserted in the bung opening which provides vacuum relief, and guards against explosion under fire conditions. al fire baffle extends into drum and permits refilling int for fire.

F-CLOSING AUTOMATIC FAUCET

ame arrester within the body at the less than a property to be the best protection and is easily where the best protection are the best protection and is easily where the best protection are the best protection and is easily where the best protection are the best protection and is easily where the best protection are the best protection and the best protection are the best protection and the best protection are the best protection are

Catalogs, Price Lists ete information.

THE PROTECTOSEAL COMPANY

1932 South Western Avenue, Chicago 8.
In Camelo: Sefety Supply Co., Toronto.





The Protectoseal Company
1932 S. Western Avenue, Chicago 8, iii.

Please send the information checked below:

- ☐ Bulk Storage Safety Equipment Catalog and Price List
- ☐ Laboratory Safety Equipment Catalog Sheet
- ☐ Safety Can Catalog and Price List
- ☐ Protectoseal Safety Bulletin: "How to Handle Flammable Liquids in the Plant."

Name	
Title	
Company	

Company____

City_______State____

Features: Halogen-filled Geiger-Muller tube which is used is insensitive to temp changes and is not limited in the number of counts it can receive during its operating life. Range shifting mechanism has been designed with a minimum number of components, which reportedly gives it maximum reliability.

Description: Model AM-2 Air Monitor has filter paper rolled in cylindrical form which is placed in the lead shielded detection chamber. The Geiger-Muller tube fits in the center of the cylinder of filter paper. A blower con-



Mobile radioactivity detector incorporates automatic range charging mechanism

tinuously draws air in from the surroundings and pulls it through the paper—G-M tube detects radioactivity in the deposited material. Pulses are indicated on a count rate meter and recorded.

Instrument has three ranges and automatic range changing mechanism. Upon changing from low to middle range, an amber blinking light comes on. When shifting to the high range, a red blinking light is lit and an alarm bell sounds.

Unit is 16" wide, 36" high and 36" deep. Counting rate ranges are 0-2000, 0-10,000 and 0-20,000 counts/min.

(Announced by Nuclear Measurements Corp., Dept. CP, 2460 N. Arlington Ave., Indianapolis 18, Ind. . . . check CP 1343, pages 2 and 3.)

For more information on product at left, specify CP 1344
. . . see information request blank between pages 2-3.

From Atomic Energy Plants to Rotogravure Presses . . .



From Power Plants to Perfume Producers . .



... 42 Stories above Manhattan . . .



Deep Down in the Earth . . .

wherever hazards are tough or unusual

CARDOX experience means dependable FIRE PROTECTION

When you buy fire protection, take a long, hard look into the experience of the people who plan and engineer it. It may mean your business survival-and the best way to judge is by what they've done!

CARDOX' experience in fire protection by low pressure carbon dioxide is on the record for all to see. For example, CARDOX Systems and Equipment* are protecting:

Vital equipment in atomic energy plants.

Much of the equipment in 14 of the nation's 25 largest utilities.

Practically all U.S. jet engine test cells.

The world's first continuous seamless pipe mill.

A radio station 42 stories above Manhattan.

Precious records in a deep underground vault.

The world's largest rotogravure press.

Even the ingredients of a perfume producer.

The list could be expanded indefinitely. This broad "know-how" of CARDOX - based upon thousands of successful Systems, plus years of research is the priceless "extra" you don't pay for in every CARDOX System. Why not write to see how we can help you?

*Covered by Patents, Issued and Pending,

EXTINGUISHING

CARDOX CORPORATION . BELL BUILDING . CHICAGO 1, ILLINOIS

When inquiring check CP 1345 on handy form, pgs. 2-3

SAFETY

Resist abrasion, abuse and liquids . . .

seamless wing thumb provided on plastic work gloves

Protect workers' hands when handling oils, chemicals, wood, steel, tile, bricks, clay, cement and machinery, rubber, and

Features: Liquid-proof and resistant to abrasion and abuse. A seamless wing thumb provides an extra safety feature.

Description: Called Dynagluvs plastic-coated gloves are available in satin-finished emerald green. They are made either fully or palm

(Manufactured by Granet Corp., Dept. CP, Framingham, Mass. . or for more information check CP 1346 on handy form, pages 2 & 3.)

Facilitates removal of foreign bodies from eye . . .

one end has magnet while the other has flexible loop

Remove foreign bodies from the eye.

Features: Sterilization of instrument will not diminish the magnetic qualities nor affect the

Description: One end of G-S Eye Sweep is fitted with a magnet for removing steel splinters while the other is fitted with a flexible loop for removing cinders, dust and other particles. A hard-rubber carrying case is provided with each Sweep.

(Available from General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . . or for more information check CP 1347 on handy form, pages 2 and 3.)

A company name and address . . .

at end of each editorial article makes it easy to follow-up on ideas you read about in these columns . . . saves you time. Write direct or use the handy Reader Service slip.

THE EDITORS

MARTINDALE

PROTECTIVE MASKS



RECIPRO-TOOL

rumish excellent protection against many non-toxic dusts. Replaceable cotton pads are inexpensive and quickly changed. Weigh less than 1/2 ounce

Masks 30 each
No. 1 Refills 0.2 each
No. 2 Refills-heavy .025 each
Country Discounts
Less than \$10.00 List \$10.00 to \$24.99 10%
\$25.00 to \$99.99 15%
\$100.00 or over 20%
Minimum, charge or C.O.D. \$2.00
Minimum, Cash with Order \$1.00
If payment accompanies order we If payment accompanies will pay delivery charges.

Permanently engraves inters, numbers, symbol, etc. on practically asyhard or semi-hard mastrial such as glass, ceramics, plastics, stone, wood, iron, brass, sleminum, etc. This powerful tool is ruggedly constructed. Easy to opensu. Made for 115 vols, & cycle A.C. current only. With hardened allos his With hardened alloy bit

With diamond tipped bit \$22.75

Send for latest catalog of maintenance and production

MARTINDALE ELECTRIC CO.

1358 HIRD AVE.

CLEVELAND 7, OH

When inquiring check CP 1348 on handy form, pgs. 2-



NoDRIP PREVENTS RUST in addition to stopping drip and keeping floors dry.

ANYONE CAN APPLY

Brush, trowel or spray NoDrip on tanks, condensers, suction lines, vats, pipes, walls, ceilings, etc. NoDrip adheres to metal, concrete, brick, plaster. It forms a seamless covering that is effective as soon as dry. Acid, alkali and brine resistant.

Interesting 32-page Handbook shows what NoDrip is and what it does. It's free. Send coupon today.

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J. W. MORTELL CO., 530 BURCH ST., KANKAKEE, ILLINOIS TEHCNICAL COATINGS SINCE 1895

When inquiring check CP 1349 on handy form, pgs. 24

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CHEMICAL PROCESSING

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Wall-mounting indicator shows whether extinguishers are full or empty . . .

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ILLINOIS

pgs. 2

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once adjusted to a full container, calibration can be done with a screw driver

Uses: Bracket indicator with a built-in scale which gives a constant recording of the $2\frac{1}{2}$ to 20 lb charge condition of CO_2 fire extinguishers.

Features: Once the unit is adjusted to a full container, it can be calibrated with a screw driver.

Description: The Silent Sentry is available for CO₂ fire extinguishers of five capacities: 2½, 5, 10, 15 and 20 lb. Indicator shows "full" in green,



Collar clamps around neck of extinguisher, and unit attaches to any wall

"empty" in red; dot on dial indicates slight changes in weight. Collar clamps around neck of extinguisher and hangs on yoke of unit. It is finished in red baked enamel and its shipping weight is 1-3/4 lb. Unit is sealed to prevent tampering or sabotage, and attaches to any wall.

(Offered by National Equipment Distributors Co., Dept. CP, 31 Milk St., Boston, Mass. . . . or for more information check CP 1350, pgs. 2 & 3.)

Contains 756 small illustrations of available safety posters

Both the serious and humorous approaches are used in the safety posters illustrated in miniature in 72-page directory. They represent the 756 types of posters which the National Safety Council is making available for purchase during 1953. Posters are grouped into 15 broad classifications: materials handling — menual; materials handling — mechanical; machinery, tools — hand & powered; chemicals and gases; fire and explosion; electricity; first aid and health; clothing and personal protective equipment; housekeeping; etc.

Posters are available in three different sizes: 8½ x 11½", 17 x 23" and 25 x 38". "1953 Directory, Occupational Safety Posters" is issued by National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 1351 on handy form, pages 2 and 3.

Licked before they start! BLAW-KNOX FOG SYSTEMS DON'T GIVE FIRES A CHANCE TO GROW UP

Chemical and petroleum fires strike fast with little or no warning. But not so fast that a Blaw-Knox Fog System actuated by rate-ofrise thermostats can't knock 'em out with a smothering blanket of fog before they really get started.

A Blaw-Knox System engineered for the fire hazards existing in or around your plant is a most effective weapon against fire's toll. On the job 24 hours a day, it protects your property as well as products essential to our national economy.

Glad to consult with you and submit an estimate without obligation.

BLAW-KNOX COMPANY

AUTOMATIC SPRINKLER DEPARTMENT Pittsburgh 33, Pa.



When inquiring check CP 1352 on handy form, pgs. 2-3



ALL HANDS ARE "SKILLED HANDS" WITH



ANSUL DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT

With Ansul Extinguishers near-expert results are obtained by inexperienced operators. In fact, all Ansul Extinguishers are designed to provide a maximum of extinguishing effectiveness in the hands of inexperienced personnel.

This feature, plus benefits listed below, account for the outstanding preference for Ansul Equipment by fire protection men in all phases of American industry.



matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

- 1. Water-tight construc- 5. Ansul "PLUS-FIFTY" tion throughout.
- 2. Easy on-the-spot Re-
- Quick, positive punc- 7. Greater fire-stopping ture operation.
- 4. Special cartridge guard 8. Field tested by thouprotects cartridge . . . rugged construction throughout.
- Dry Chemical used exclusively.
- charging (No tools 6, Corrosion resistant construction throughout.
 - power.
 - sands of satisfied customers.

OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES IN THE U. S. A., CANADA AND OTHER COUNTRIES



MANUFACTURERS OF DRY CHEMICAL FIRE EXTINGUISHERS, INDUSTRIAL CHEMICALS, SPECIAL CHEMICALS, REFRIGERANTS AND REFRIGERATION PRODUCTS . DISTRIBUTORS OF DU PONT "FREON" REFRIGERANTS

When inquiring check CP 1353 on handy form, pgs. 2-3

Safety Week

(Continued from page 147)

Standard drop-ball (or equivalent) demonstration showing impact resistance of standard safety goggle

Smoke bomb demonstration through canister of gas mask to show "clean" air coming from outlet of

4th Day-Safe Practices and Conditions. Department supervisors' talk to their employes in 15-minute on-the-floor meeting, covering safe working practices and reporting of unsafe conditions. Inspection and tour. Display ideas: enlarged photo displays of some of plant's mechanical guarding features - gear guards, circular saw guards, etc; portable power tools with principal safety features placarded and explained; syphon and pump devices for emptying carboys and sample bottle carriers.

5th Day-Off the Job Safety. 1) Distribution of literature to employes on vacation safety, automobile safety, bicycle safety, etc; 2) safety poster contest for children of employes, with prizes; 3) talk to employe lunch-time rally by officer of local police, state police, or other governmental highway safety organization.

Suggested demonstrations: recently wrecked automobile, borrowed from local garage, with placard



describing accident in which involved; artificial resuscitation; safe household articles, including skidproof throw rug, lamp socket with insulated pull chain, blunt scissors for children's use, etc.

6th Day-Safety Throughout the Entire Year. Employe safety rally address by plant manager to review the "Safety Reminder Week" program and to impress on employes that this was just a safety reminder campaign — that safety in the plant and off the job should be an important part of their everyday activity, year-around. At this rally the plant manager may make awards for any contests held during the week.

Safety record figures in 1952 for American Cyanamid show a reduction in accident frequency for the eighth

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... the Original Coal Tar Tape Protection for Pipe, **Pipe Joints, Couplings** and Tanks



TAPECOAT is a coal tar coating with a tar-saturated, close-woven fabric as a carrier for easy application, providing a natural protection against corrosion.

TAPECOAT serves as both bond and protection...requires no foreign adhesive.

TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles and other severe corrosive and abrasive condi-

TAPECOAT is clean to handle and easy to apply by spiral or "cigarette" wrapping with the use of a torch to bleed the coating for a bond to the surface. It cuts maintenance and replacement costs.

SIZED TO THE JOB

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths to meet varying requirements.

TAPECOAT has proved its dependability for gas and oil companies, railroads, telephone companies, air lines, ship builders and operators, water and sewage works, chemical and industrial plants. engineers and contractors . . . in combating corrosion both underground and above



Write for descriptive brochure and prices

The TAPECOAT Company

Originators of Coal Tar Tape Protection

1545 Lyons Street, Evanston, Illinois

When inquiring check CP 1354 on handy form, pgs. 2-3

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CHEMICAL PROCESSING

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consecutive year. The number of lost-time accidents per million man-hours was 1.93, and since 1944, the company has reduced its accident frequency rate approximately 85%.

Perfect safety records were compiled in 1952 by 20 Cyanamid plants. The Bound Brook, N. J., plant completed 6,211,638 man-hours without injury, while the Latrobe, Pa., plant, where electric blasting caps are made, continued a perfect safety record which began in 1943.

(Information courtesy of American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, New York.)

Announce 2 speaker-driver units for sound systems in hazardous sites . . .

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both are watertight and weatherproof and provide excellent frequency response

Uses: Speaker-driver units for indoor and outdoor public address and sound reinforcement systems. One of units has UL approval for use in such industries as plastic, gas and chemical manufacturing, or wherever flammable liquids or gases are present. Other unit, also carrying UL approval, is applicable in any location where metallic dust, grain, or foreign particles present an explosion hazard.

Features: Both units are watertight and weatherproof. In addition, they provide excellent frequency response and have a high power-handling capacity.

Description: Type MI-12461-1 is for the first use mentioned above, and type MI-12461-2 is for the second application. They are provided with Alnico V magnets and have beryllium-copper voice coils. Both have reported peak power ratings of 60 w and a frequency response of 90 to 7000 cps.

Each unit is housed in an aluminum casting with a removable back cover plate, and weighs about 15½ lb. Either unit can be easily coupled to any straight or re-entrant horn.

(Manufactured by RCA Victor Division, Radio Corporation of America, Dept. CP, Camden, N. J. . . . check CP 1355, pgs. 2 & 3.)

Industrial truck safety posters available on request

A series of eight safety posters designed to instruct industrial truck operators in safe driving and operating practices has been made available. Printed in color on 14 x 22" sheets, the posters are done in a bold cartoon style. Tag-line, "Be Smart — Be Safe," appears on each poster.

"High-stack with care", "Know your clearance", "Watch load limits", "Always brake carefully", are typical subjects treated in the series. Posters are issued on letterhead request to The Baker Raulang Co., Baker Industrial Truck Div., Dept. CP, 1230 West 80th St., Cleveland 2, Ohio.

FOR THE Roughest JOBS ... GET THE Toughest GLOVES

U. S. INDUSTRIAL "HEAVYWEIGHTS"

CANVAS LINED OR ALL NEOPRENE Heavy construction for protection from the most severe working conditions. Withstand gasolines, oils, greases, acids, corrosive chemical solutions. # 1367-Hvywgt. # 1377-Liwgt. Protect against cuts, abrasions, splinters. CANVAS LINED, NEOPRENE DIPPED: Curved finger construction for comfortable, No. 1367 U. S. Royal Knit Wrist. Full-cut, eightnatural movements. ounce canton flannel inserts. One size only. High flexibility. Better gripping reduces spoilage and accidents. Longer lasting. UNLINED, NEOPRENE DIPPED: Hyywat. No. 1398 Non-Slip Finish for positive No. 1374-12 in. grip. (Smooth Finish available on special No. 1375-141/2 in. order.) Sizes 8 through 12. No. 1379-141/2 in. reinforced #102-Ltwgt.-10½ in. #1311 Medwgt.-10½ in. CANVAS LINED, NEOPRENE DIPPED: One size only. #1398-Hvywgt.-14 in. #1399-Hvywgt.-18 in.

United States Rubber Company will be happy to analyze your glove needs and recommend the U. S. Glove for you. Call your nearest "U. S." branch or write United States Rubber Company, P. O. Box 1453, Providence, R. I.



U. S. INDUSTRIAL GLOVES

Products of UNITED STATES RUBBER COMPANY

When inquiring check CP 1356 on handy form, pgs. 2-3

153

FRESH AIR AND SAFETY right in the middle of TOXIC WORKING AREAS!

PENNSALT PROTECTS ITS WORKERS with



Scott Air-Paks

(TRADE MARK)

Pennsalt's Safety Director writes:
"We use Scott Air-Paks in our plants
for worker protection on emergency
jobs where men are exposed to chlorine, ammonia or acid gases. Much
routine cleaning work requires the
use of protective equipment for
entering tank cars, rotary kilns, etc.
The Scott self-contained equipment
assures the wearer a source of air
entirely independent of the surrounding atmosphere."

Why risk the lives of your employees and lose production in toxic areas when you can play it safe with Scott Air-Paks?

SCOTT SLING PAK

A quick, easy to use, lightweight Air-Pak for emergency jobs.



Here's safe, comfortable breath-

SCOTT EXTENSION

HOSE ASSEMBLY

its use in industrial operations.

SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

242 Erie Street Lancaster, N. Y

Call your Safety Equipment Dealer or write direct

for complete information on Scott equipment and

Canada: Safety Supply Co., Toronto — Branches in principal cities Export Southern Oxygen Co., 157 Chambers Street, New York 7, N.Y.

When inquiring check CP 1357 on handy form, pgs. 2-3

SAFETY

Rapid-scan ∝ detector embodies many refinements . . .

hermetically sealed transformers used throughout

Uses: Detecting alpha-particle emitting contamination.

Features: Probe-sensitive area measures 3/4 by 8-3/4" long, and allows a large area to be surveyed rapidly. The background counting rate is less than 20 counts per hour. Hermetically sealed transformers are used throughout.

Description: The RCL Alpha Poppy Model 2801 produces a "pop" for each alpha particle entering the sensitive volume. According to manufacturer, it is built and tested exactly according to Oak Ridge National Laboratory Q-1306 specifications.

Instrument is composed of a convenient thin window, single wire, air proportional counter probe with preamplifier on a 20' cable, and an electronic circuit containing a pulse amplifier, power supply and loud-speaker.

Regulated high voltage power supply for the counter is adjustable from 2000 to 2700 v. Alpha plateau is 200 v long and the operating voltage is 2400 v. Power consumption is 40 w at 115 v AC, 60 cps. Grey hammertone cabinet measures 8 x 8½ x 16½".

(Model 2801 is a development of Dept. PF-3E, Radiation Counter Laboratories, Inc., Dept. CP, 5122 W. Grove St., Skokie, Ill. . . . or for more information check CP 1358 on handy Reader Service slip, pages 2 & 3.)

Protects naval depot against static

Report outlines the problem of preventing explosions and fires caused by static, gives details about a static alarm system being used to protect the U.S. Naval Ammunition Depot at Crane, Ind., and describes the method of operation. "New Static Alarm Systems-Fire Protection for Industry" is available upon request from The John Hewson Co., Dept. CP, 106 Water St., New York 5, N. Y. When inquiring specify CP 1359 on handy Reader Service slip, pages 2 and 3.

BENJAMIN VAPOR-TIGHT FLUORESCENT LIGHTING UNITS LICK HUMIDITY AND DIRT PROBLEMS



Where excessive dirt, dust, smoke, corrosive fumes or moisture-laden air present lighting problems, the best answer is Benjamin Vapor-light Lighting Equipment. These units withstand such adverse atmospheres with a minimum of maintenance and trouble-free performance. They're seeled against moisture penetration

'Springlox"

lampholders

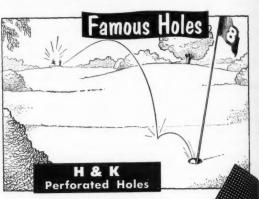
by an extruded rubber gasket and maist-proof conduit entrances. They defy humidity with an over-all coating of "Life-Time" porceion enamel. For full details on how to lick your problems of lighting humid and dirty locations, send for REE BULLETIN VT. Benjamin Electric Mig. Co., Dept. LL, Des Plaines, Illinois

COVER UNSNAPS IN A JIFFY

· LAMPS CUSHIONED AGAINST VIBRATION



When inquiring check CP 1360 on handy form, pgs. 2-3



The Hole-in-One

Once in a lifetime — and only to a few will come this exhilarating experience. The rest of us will have to be satisfied with an occasional "deuce".

To those who require many holes, accurate in size and shape, uniformly spaced over the whole or restricted areas of sheets and plates, we have the answer. For 70 years we have devoted our efforts to the business of perforating sheets and plates of all the metals as well as plastics, hardboard and even plywood. Holes so small that there are nearly a thousand to a square inch. Holes the size of marbles, of golf balls, baseballs—even basketballs. Holes that are square, slotted, triangular and ornamental.

Whenever you require perforated materials, send us your specifications, because —

Harrington & King

5636 Fillmore Street, Chicago 44, Illinois 114 Liberty Street, New York 6, New York Our Catalog No. 62 sent gratis on request.

When inquiring check CP 1361 on handy form, pgs. 2-3

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Chem industry establishes new safety record in '52 . . .

association states average chemical plant worker is more than twice as safe on the job as off

Recently announced lost-time accident figures for the chemical industry showed that the year 1952 produced a 15% improvement over 1951. Even more noteworthy is that the figure reported — 4.10 lost-time accidents per million man-hours worked — is the lowest figure in the history of the industry. On the basis of this figure, the average chemical plant worker is more than twice as safe on the job as off the job.

This accident rate is less than the 9.06 figure reported by the National Safety Council for all industry in 1951 and is lower than the 1951 NSC rate for any industry except communications and electrical equipment. Since 1946 the chemical industy has reduced its accident frequency rate forty-six per cent.

On the negative side was the slight increase in accident severity rate for the industry over the year. It went from 0.68 in 1951 to 0.73 in 1952. Chemical industry's safety record as compiled by reporting agency for 1951 and 1952 are as follows:

	1951	1952
No. companies reporting	89	87
Total man hours worked (millions)	658	677
Total disabling injuries	3179	2782
Accident frequency rate	4.83	4.10
Accident severity rate	0.68	0.73

(Reported by Manufacturing Chemists' Association, Incorporated, 5413 Empire State Building, New York 1, New York.)

Final results of safety contest in chemical industry

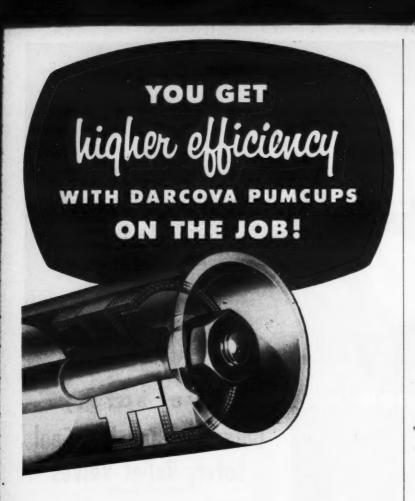
Covering the contest year January 1, 1952, to December 31, 1952, 15-page bulletin tabulates the results of the safety contest in the chemical industry sponsored by the National Safety Council. The first page contains a summary of contest facts for background information. Noted here, for example, are the reductions achieved over 1951 figures: — a 7% decrease in injuries and a 9% decrease in frequency rate. Also entered here is the fact that there was a 3% increase in manhours over 1951

The chemical companies are listed according to rank within the three classifications they are divided into: — Division I (units with rates of 1.50 or lower in 1951 contest), Division II (units with rates of 1.51 to 7.00 in 1951), and Division III (units with rates of 7.01 or more in 1951). Within the divisions, companies are subdivided into groups. Results show rank, accident frequency rate for the year, and any change over 1951 rate.

"1952 Award Winners, Chemical Section" is issued by National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 1362 on convenient Reader Service slip between pages two and three.



When inquiring check CP 1363 on handy form, pgs. 2-3



THERE are two basic, wellproved reasons why more and more Darcova Pumcups are going into cylinders of air and hydraulic controls and mechanisms.

First, texture-engineered Pumcups outlast most other piston packings at least 3 to 1. There's less replacement, less down-time! Secondly, efficiency does not diminish as Pumcups wear. Response is always faster, surer, with less power consumed!

Darcova Pumcups are available in sizes and engineered textures ideal for virtually any service. Why not find out what they can save you?

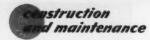
ASK FOR BULLETIN No. 4502

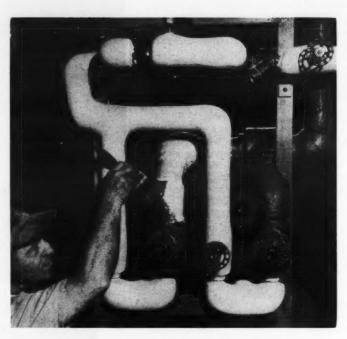
DARLING VALVE & MANUFACTURING CO.

Williamsport 4, Pa.



When inquiring check CP 1364 on handy form, pgs. 2-3





Plastic coating, combining color identification and insulation in one finish, can be applied by either brush or spray gun

Combine Color Identification and Protection in Finish

Plastic coating withstands temperatures to 160°F, has high resistance to bumping or abrasion, can be used indoors or outdoors

USES: Finish is suitable for use on insulated refrigerant, cold water, steam, brine, and other types of pipe lines or can be used as a coating for insulated equipment. Heat insulations, standard asphaltic finishes, cork pipe covering and lagging, and cork-insulated air conditioning ducts can be coated with product. In addition, it can be used as an adhesive for pasting down canvas, asbestos, and other lagging

cloths, eliminating the need for sewing the material.

Features: Plastic coating can be utilized for both protection and color identification. It will withstand temperatures up to 160°F without cracking, crazing, or shrinking. Finish is tough, stands up well under bumping and abrasion. It has high water resisting properties which make it suitable for either inside or outside applications.

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Description: Insulcolor is a durable plastic coating that can be applied with either brush or spray gun. It is available in white, light and dark green, light and dark blue, yellow, and buff. It can be applied over standard asphaltic finishes without danger of bleeding. When used as an adhesive for lagging, product is diluted with water. No inflammable solvents are used in the fire-retardant, odorless finish. Dust, dirt, grease, oil, and soot can be readily washed off the materials dried smooth surface.

Base white and the color tint desired are shipped in separate containers and mixed on the job. base is supplied in 3½ gallon pails, containing 3 gallons of material, which allows space for mixing. Coverage is 35 to 50 sq ft per gallon in two-coat application, depending on surface being finished. (Developed by Armstrong Cork Co., Dept. CP, Lancaster, Pa. . . . check CP 1365, pgs. 2 & 3.)

Four cubic yard crushing chamber furnished by gigantic unit . . .

extra large jaw crusher has removable roller bearings to simplify maintenance

Unit is desirable for installations requiring high tonnages from large size feed.

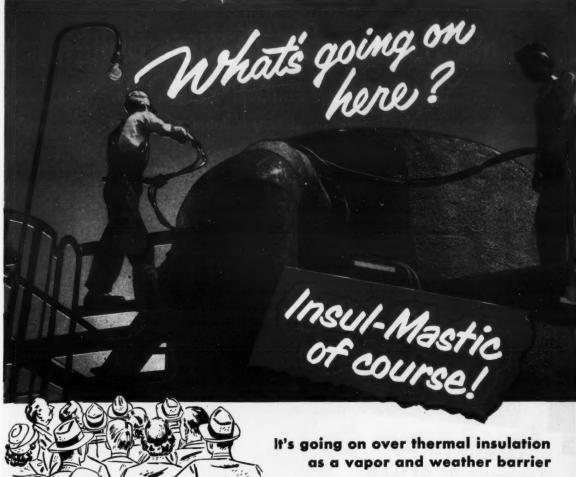
Capacity of unit is indicated by size of crushing chamber, which exceeds four cubic yards. Of particular significance from a maintenance standpoint is the fact that the roller bearings can be readily removed from the shaft hydraulically. Shaft is provided with grooves so that oil under pressure expands the inner races sufficiently so that the bearings can be slid off freely.

Overhead eccentric jaw crusher, 42 Description: x 48", weighs more than 94,000 lb. It is equipped with SKF self-aligning roller bearings to conserve on power and to reduce shaft strain to a minimum. Adjustments permit an opening at the bottom of the jaws from 4 to 13". Other statistics are as follows:

Length of moving jaw. Length of stationary jaw	104"
Pitman	Cast alloy steel
Pitman shaft length	10'
Pitman stroke	11/4"
Pitman speed	250 rpm
Flywheel diameter	60"
Flywheel weight	4060 lb
Toggle plate	Mild steel
Toggle seat	Alloyed cast steel with rocker action

Saddle type mountings on machined surfaces support the outer bearings to prevent loosening and bearing wobble. Manganese jaws, both moving and fixed, are of two-piece construction to facilitate handling. Jaws are specially designed to reduce wedging resulting from cold flow and peening of the metal. Base is double wall, box type, all-welded construction built in an upper and lower half so it can be lifted and lowered with standard equipment.

(Product of Pioneer Engineering Works, Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. . . . check CP 1366, pgs. 2 & 3.)



Here's how the Aluminum Ore Company at Bauxite, Arkansas keeps absorbent insulation dry. Membraning cloth is pressed into a light coat of INSUL-MASTIC. Then a heavy coat of INSUL-MASTIC is sprayed over this. That ends the insulation worries for years to come.

The insulation stays dry and efficient beneath its INSUL-MASTIC coat. And while it's dry the tank can't rust.

This Superior coating gives lasting protection because of its flexibility and its tough fillers, like asbestos, which absorbs physical abuse, and mica, which reflects harmful rays of the sun. Its large Gilsonite content resists industrial fumes and vapors. Weather won't harm INSUL-MASTIC. It will stand 40° F. below zero or 300° F. above. As for being watertight . . . its moisture vapor transmission rate is only .01 grams per 100 square inches per 24 hours per 1/8 inch.

Specify this Superior coating for your thermal insulation or to prevent corrosion. Write for our catalog and the name of the INSUL-MASTIC Representative near you.

Where less insulation is needed use INSUL-MASTIC TYPE "D". One coat over metal insulates and also prevents corrosion.

Think

First

of the

Coatings

that Last!

Building . Pittsburgh 22, Pa.

Representatives in Principal Cities

When inquiring check CP 1367 on handy form, pgs. 2-3

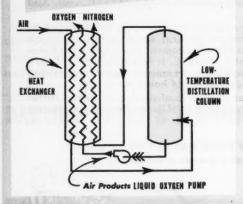




...part of an Air Products Generator for SPENCER CHEMICAL'S new ammonia plant



Capacity per day 180 TONS OF OXYGEN 350 TONS OF NITROGEN



SIMPLIFIED DIAGRAM of the Air Products Generator for

Spencer, which will separate oxygen and nitrogen from

liquid air. Air Products columns of this type also used for

low-temperature scrubbing of synthesis gas, hydrocarbon

ON ITS WAY to Spencer Chemical Co.'s new ammonia plant in Vicksburg, Miss. Spencer awarded *Air Products* the contract to design and manufacture a complete Oxygen-Nitrogen Generator.

When in operation, this generator will produce 180 tons of oxygen and approximately 350 tons of high-purity nitrogen per day. Spencer will use the oxygen to produce hydrogen (H), then combine this with the nitrogen (N) to produce ammonia (NH₃).

What are <u>your</u> requirements?

Air Products offers low temperature apparatus custom-made for all gas separation processes, plus a standard line of Oxygen-Nitrogen Generators. Write us your requirements.

Serving the STEEL, CHEMICAL, PETROLEUM and ELECTRONICS Industries



Dept. K, Box 538 Allentown, Pa.

When inquiring check CP 1368 on handy form, pgs. 2-3

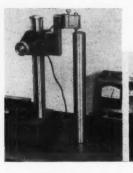
CONSTRUCTION & MAINTENANCE

Rigid support, ready positioning provided by gage adapter for surface plate work . . .

attachment can be connected to saddle in either high or low position

Uses: Bracket is for adapting company's standand-anvil-type electronic production gage to a wide range of surface-plate work.

Features: Heavy base and column provide rigid support, yet stand can be readily positioned on the surface plate. Bracket is attached to the back of



Adapter is shown in operation in high position at left, and in low position, below



the saddle and carries either the Par-Ac gage head or an Indi-Ac Electronic Indicator head. Adapter bracket can be attached to the saddle in either of two positions — for holding the gage head to reach extra-high or extra-low surfaces.

Description: With the bracket attached in high position, gage head contact tip has a vertical adjustment of $6\frac{1}{2}$ " to $17\frac{3}{4}$ " above the surface plate. With the bracket attached in low position, adjustment is 0" to 11". Gage head can be mounted upside down for checking bottom surfaces. Adapter bracket normally remains on the saddle and does not affect use of equipment as a production gage.

Accompanying photographs show gage adapter in operation. Illustration at the left shows unit in high position, measuring the height of a long cylindrical part. At right, adapter checks the parallelism of a sine bar setup while in low position.

(Par-Ac Adapter Bracket is product of Cleveland Instrument Co., Dept. CP, 735 Carnegie Ave., Cleveland 15, Ohio . . . or for more information check CP 1369 on handy form, pages 2 and 3.)

Seal on plastic package warranted for life use of bag or liner

Four-page, two-color catalog presents polyethylene bags and liners for industrial use on which seal is warranted for life use of bag or liner. Uses of these tasteless, odorless, non-toxic bags and liners are described and illustrated. Various types of bag or liner closures are discussed.

Complete specifications of bags and liners are given. Widths from 3 to 38 inches are standard in any length. Special widths up to 56 inches can be machine made by gussetting. Standard gages

Compr combin gasket

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Descriptories made the Neopulp. In ness with asbestos as follows:

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(Asbesto from as Victor N velt Rd... check C are .0015, .002, .003, .004, .005, and .006. Special fractional gages are available on request. Catalog on polyethylene bags and liners is issued by Plastic Packaging Co., Dept. CP, 730 N. Franklin St., Chicago 10, Ill. When inquiring specify CP 1370 on handy Reader Service slip between pages 2 and 3.)

Compressibility, heat resistance combined in asbestos-Neoprene gasket material . . .

soft product fills gap between compressed asbestos and cork or rubber

Uses: Material is said to successfully fill the gap in gasketing materials between compressed asbestos sheet and cork or rubber. Compressed asbestos sheet has excellent heat resistance, but is quite hard and requires high sealing pressure. Cork and rubber are soft and readily compressible, but are not suitable for service involving elevated temperatures.

When design engineers have been required to meet this compromise between compressibility and heat resistance, manufacturers have generally offered glueglycerine treated paper. This asbestos-Neoprene material is for the same application but is said to be a better compromise.

Features: Material is more compressible and more heat resistant than glue-glycerine treated paper. In addition, it has much better dimensional stability and does not cause corrosion of light metals. It is resistant to oils, water, gasoline, and antifreeze solutions. Material is also quite strong and flexible.

Description: Asbestos-Neoprene gasket material is made on modified paper-making machines where the Neoprene can be added in latex form to asbestos pulp. Advantage of this technique is the thoroughness with which the Neoprene is dispersed on the asbestos fibers. Physical properties of material are as follows:

tensile strength	1500 psi mii
(in machine direction)	
Tensile strength	
(in cross-machine direction)	500 psi min
Mullen burst strength per	130 lb
1/16" gage	
Compressibility at loading	20-30%
of 1000 psi	20 30 70
Recovery	40% min
Hardness, Shore Durometer A	, .
maidiless, Shore Durometer A	70 + 10

Flexibility is such that a 1/16" sheet can be bent around a 1/32" mandrel without cracking. Oil resistance is shown by 90% minimum retention of tensile strength and 5% maximum thickness change after five hours immersion at 300°F in ASTM No. 1 test oil. Gasoline resistance is illustrated by 0 to 5% thickness change after five hour immersion at 70°F in ASTM No. 1 reference fuel.

(Asbestosprene gasket material, which was developed from asbestos and duPont Neoprene, is made by Victor Mfg. and Gasket Co., Dept. CP, 5752 Roosevelt Rd., Chicago, Ill. . . . or for more information check CP 1371 on handy form, pages 2 and 3.)



Adding "Safety Valves" to match heads

Incorporated in match heads, Celite Mineral Fillers act as "safety valves" to prevent flare-up and kill afterglow.

The explanation: Celite's porous, thinwalled, cellular structure gives the match heads greater porosity so that gas can escape quickly.

Celite's abrasive quality also makes matches easier to strike. And from a production line standpoint, the high absorptive capacity of this mineral filler speeds drying of the match heads... while its light weight and great bulk improve dispersion of the active chemicals in the match head mix.

These and other unusual physical characteristics adapt Celite Mineral Fillers to numerous industrial uses.

THESE CELITE PROPERTIES BENEFIT MANY TYPES OF PRODUCTS

Celite's minute, chemically inert particles have an irregular, spiny structure—which accounts for their efficiency as a delicate abrasive in polishes, as a flatting agent in paints, varnishes and lacquers, and as a reinforcing agent for paint films and rubber products.

Celite powders can absorb up to three times their own weight of liquid—making them particularly useful in preventing ammonium nitrate crystals from caking, in absorbing liquid insecticide poisons, and in controlling pitch trouble at paper mills. And because the loose weight of Celite averages only 10 pounds per cubic foot—these mineral fillers are employed to fluff-up insecticide dusts and household cleansers, as well as to extend white pigments in paper manufacture.

If you are looking for the "extra something" to lift your product above competition—at no extra cost—why not discuss your problem with a Johns-Manville Celite Engineer? For further information and samples, write Johns-Manville, Box 60, New York 16, N. Y. In Canada: 199 Bay Street, Toronto 1, Ontario.

CHECK LIST OF PRODUCT BENEFITS OBTAINABLE AT LITTLE COST WITH CELITE MINERAL FILLERS

- Added Bulk
- Better Suspension
- Faster Cleaning Action
- Greater Absorption
- Improved Color
- Better Dielectric
 Properties
- More Durable Finish
- Increased Viscosity
- Elimination of Caking
- Higher Melting Point
- Better Dry Mixing
- Improved Dispersion
- Greater Porosity



Johns-Manville CELITE

MINERAL FILLERS

When inquiring check CP 1372 on handy form, pgs. 2-3





CORROSION . . . the cast-iron casing, cover and impeller are protected by a heavy covering of OLIVITE, firmly bonded to the metal. It will not pull away or slough off. OLIVITE - a special rubber base plastic impervious to most chemicals, hot or cold, strong or weak. For special chemicals we have OLIVEX - a strong high tensile plastic of which the impeller is made for certain applications.

Here's how the Olivite answers them:

LEAKAGE... We employ three elements to prevent leakage and protect the shaft: 1) Floating Stuffing Box which constantly adjusts itself to the shaft; 2) Spring-Loaded Gland enabling the operator to easily keep the packing under proper pressure; 3) Removable Shaft sleeve which protects the shaft against corrosion as well as wear.

Even assuming that all acid-handling pumps have equal pumping efficiency -which they don't-your choice will focus on the pump that provides maximum protection against corrosion and leakage. At least, these two thoughts were important in the minds of a number of companies now operating 100 or more Olivites. Would you like to have us tell you more about these big Olivite installations?

Our OLIVITE Bulletin No. 308-R

In sending for your copy of this bulletin, tell us about your pumping problem.

Olivite Sizes 114, 2 and 4 inch; Direct or V-belt drive.

UNITED

WORLD WIDE SALES, SERVICE AND MANUFACTURING FACILITIES

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Representation through The Dorr Company and Its Affiliates

Oliver (India) Ltd . Somboy

SOUTH AMERICA & ASIA

When inquiring check CP 1373 on handy form, pgs. 2-3

CONSTRUCTION

Automatic reseating offered by relief valve . . .

withstands high temperatures without deterioration

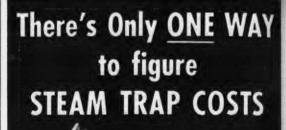
For affording protection for hot water storage heaters.

Relief valve acts as a thermostat, opening when water reaches 208°F and closing drip tight when the water has become sufficiently cool to eliminate the dangerous condition. Valve contains no fluids. It will withstand high temperatures without deterioration, according to manufacturer.

Description: Relief valve is AGA approved and is available in either the regular or stem type, with or without try levers. Regular valve is for ordinary hot water storage heater installation. Stem type is recommended for electric heaters, insulated tanks, and instal-



Provides pressure and temperature relief for hot water storage age requirements



Purchase Price + Installation Cost + Maintenance Cost Total Trap Cost

on this basis SUPER-SILVERTOPS are always your BEST BUY!

 All good steam traps cost about the same . . . on the shelf. But there's a big difference in their price when you figure installation and maintenance costs. Because there are 75% fewer threaded joints required with the simplified piping of Anderson Super-Silvertops, 75% less installation time is required.

75% LESS INSTALLATION TIME because Super-Silvertops can be installed straight-in-line with Cl

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LESS MAINTENANCE is needed with Super-

or as an elbow. Silvertops. They have long-life Anderloy valve and seat-large, smooth drilled passages that seldom clog-guided bucket for positive valve closing to prevent bucket damage.

50% LESS

MAINTENANCE as Super-Silvertops are easily serviced without disturbing a sinCut your steam trap costs to the bone. Save on installation and maintenance costs by installing Super-Silvertops. Mail coupon for free catalog, "Solving Steam Trap Problems" and prices.



1932 West 96th St. . Cleveland 2, Ohio

Please send free copy of "Solving Steam Trap Problems" and prices on Super-Silvertop Steam Traps.

Address _____

City State ...

When inquiring check CP 1374 on handy form, pgs. 2-3



with Chelsea's new heavy duty airfoil type exhaust fans. For use in exhausting, duct work, filter installations, range or vat hoods, penthouse units, paint spray booths, where static pressures are encountered.

WRITE FOR NEW CHELSEA CATALOG No. 400

including detailed information on type, size, specifications, engineering data and installation recommendations. 30 types and over 200 sizes. Please address requests to Dept. R 5.

FOR FACTORIES, FOUNDRIES, MINES, MILLS — totally enclosed ball-bearing motors



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DIRECT DRIVE — 16" to 48" in all H.P. ratings, Square frames for easy installation.



TYPE PLDX POWER LINE DUCT BOOSTER—Motor external to Air Stream. 16" to 48" in all H.P. ratings.



TYPE PLBD POWER LINE SELT DRIVEN — 24" to 48" in all H.P. ratings. Square frames for easy installation.



TYPE PLDU POWER LINE
AIR BLASTER—For spot cooling — available on pedestal.
18" to 42" in all N.P. rating.

PROPER VENTILATION

IS AN INVESTMENT!

Look for this Symbol of Quality

Look for this Seal of Certified Ratings



CHELSEA FAN & BLOWER CO., Inc.

When inquiring check CP 1375 on handy form, pgs. 2-3

lations wherein close nipples cannot be used. Standard factory pressure relief setting is 125 lb. Standard temperature setting is 208°F. Other settings may be specified, if desired.

(Econo-Therm Relief Valves, designated as Cash-Acme's Type V Series are product of A. W. Cash Valve Mfg. Corp., Dept. CP, Wabash and Morgan St., Box 271, Decatur, Ill. . . . or for more information check CP 1376 on convenient Reader Service slip between pages 2 and 3.)

Test equipment for use in electrolysis surveys

Five-page catalog covers testing equipment for electrolysis survey work in detecting and preventing corrosion of pipe lines. Included are prod bars and contact bars. Prod bars of various lengths are furnished in tool steel and stainless steel. After punching a hole above a buried pipe, contact is made with contact bar which has handle and removable drill bit. Electrical terminal is provided in one end of handle.

An effective means of making contact with a pipe line in cases where pipe has been exposed is furnished by use of C-clamps. Malleable iron unit has tool steel point and a terminal for connection leads.

Sometimes in making electrolysis surveys, it is necessary to obtain the potential between the ground and the pipe. Copper sulfate electrode is recommended by manufacturer for this purpose. It is made of phenolic-covered copper tubing with porous wood tip.

Means of terminating leads brought off of underground structures for ready testing at any time is supplied by electrolysis test station. This unit consists of terminals mounted on a phenolic insulating block, with a semi-steel protecting cover.

Bul 940 is issued by Nelson Electric Mfg. Co., Dept. CP, 217 N. Detroit Ave., Tulsa, Okla. When inquiring specify CP 1377 on convenient Reader Service slip between pages two and three.



Every Contact Inch Highly Corrosion Resistant

ODS Pumps are available, of course, unlined for handling non-corroding slurries or solutions but when protection is necessary, all contact surfaces are lined with rubber or neoprene.

So, if you have a pumping problem that calls for a diaphragm pump—regardless of the pH involved—get all the facts about the O.D.S. It can handle just about any slurry or solution found in industry. And it has one of the best low-maintenance features to be found among all pumps: a no-linkage, hole and slot-free diaphragm. Compressed air or vacuum actuates the diaphragm.

Our Bulletin 309-R — recently issued — gives all the latest details about the O.D.S. Pump. In writing for a copy, tell us about your pumping problem. We have a line of acid-handling centrifugal pumps, too — the Olivites.







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Oakland 1 — 2900 Glascock St. San Francisco 11 — 260 Calif. St
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When inquiring check CP 1378 on handy form, pgs. 2-3



Cleanout time is cut... and the job's done better... with Airetool cleaners. They're designed with years of maintenance know-how behind them.

even the heaviest coke deposits are readily removed without damage to still tubes



Airetool does the WHOLE job. Put new life into even completely coke-clogged heat exchanger or condenser tubes with lightweight geared Airetool cleaners.



There's an

tube cleaner

Airetool

The Airetool overhead catalyst removal system cleans spent catalyst from the entire length of the tube . . . safely . . . efficiently.

Contact your nearest Airetool office and make next cleanout time less costly and more productive. For literature write The Airetool Mfg. Co., 331 S. Center St., Springfield, Ohio.

and tube expander for every type of tubular construction



BRANCH OFFICES:

New York, Philadelphia, Chicago,
Tulsa, Baton Rouge, Houston,
Hudson Heights (N.J.)

Representatives in principal cities in U.S.A., Conada, Mexico, South America, England

When inquiring check CP 1379 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Compactness in horizontal assembly provided in addition to line of variable speed motors

A compact installation in applications requiring horizontal assemblies results from addition to manufacturer's line of variable speed motors. Units of that style are available up to 30 hp through use of a horizontal frame size.

Horizontal motor possesses all the features of the upright model. These include all-in-one construction (motor, variable speed transmission and gearing when necessary), microspeed control and indicator, and splined Varidisc sheaves. Unit also has double cog Varibelts with Autotaut tension



Horizontal variable speed motor assembly

control for permanent belt adjustment, dual belt construction, asbestos-protected motor, and normalized castings. Drive is also available in combination with U. S. Syncrogear, with either single or double reduction gearing.

Motor controls may be conveniently located above or at the side of the motor. Remote controls can be obtained either with mechanical extensions or electric pushbutton stations. Motors are offered in ratings from ½ to 50 hp, with speed variations up to 10:1. Speeds are from 2 to 10,000 rpm.

(Horizontal Varidrive Motor 64 VE is product of U. S. Electrical Motors, Inc., Dept. CP, Box 2058, Terminal Annex, Los Angeles 54, Calif. . . . or for more information check CP 1380 on handy form, pages 2 and 3.)

Shines floors and kills bugs — in one operation

Double-service product is a combination of floor wax and insecticide. Insecticidal wax is self-polishing and water resistant. 'It works on linoleum, asphalt tile, rubber tile, and cement as well as varnished and painted wood floors. The material has been proved skid resistant.

Lindane, the insecticide in the product, is odorless and safe to human beings and animals. Yet, it kills roaches, ants, waterbugs, silverfish, and other insects.

Wax was tested in sub-tropical Florida where insect control is difficult, and where high humidity plus

Dore'

the mark of quality on molded "TEFLON SEALS" for GLASS PIPE

Technical skill and unrivaled production facilities, combined with care and precision, plus specially developed and exclusive operations, are your assurance that "TEFLON" products molded by Dore' meet the most exacting requirements.



"TEFLON" DOG LEGS

Because of their precision fit, these gaskets seal with minimum bolt pressure. They are uniformly sintered and each section of the dog leg has the same density. The protruding sealing faces are not wavy so that they remain in their respective planes throughout the entire gasket's circumference.



"TEFLON" ENVELOPES Style E-16

Non-Porous "TEFLON" Envelopes, cushioned with a resilient gasket, assures a complete seal for glass flanges in any service. Due to a special process developed by Dore', the "TEFLON" Envelope will not split or break on the inside diameter. Neoprene, compressed asbestos and woven asbestos are generally used as fillers.

DO BUSINESS WITH DORE' for "TEFLON" SHEETS, RODS, TUBES, PACK-ING SETS, GASKETS, SPECIAL MOLDED SHAPES AND TAPES.

"TEFLON" Shapes at their best—when molded by Dore'.

John L. Dore, Co.

SALES AGENTS IN U.S.A. FOR JOHN L. DORE INC.
MOLDERS OF TEFLON AND "KELF" SHAPES
P. O. BOX 6802 HOUSTON | TEXAS

When inquiring check CP 1381 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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CONSTRUCTION & MAINTENANCE

constant heat makes it hard to keep floors waxed. It has proved effective as a floor covering and insecticide continues to destroy bugs between waxings, according to manufacturer. Wax meets the applicable government specifications.

(Product of Freewax Corp., Dept. CP, Tallahassee, Fla. . . . or for more information check CP 1382 on handy form, pages 2 and 3.)

Floor maintenance facilitated in six paper plants with concrete saw . . .

perimeter of damaged area is sawed 1/4" deep, confining breakout fracturing

Consolidated Water Power & Paper Company of Wisconsin Rapids, Wisconsin was confronted with the problem of frequent floor patching and maintenance due to heavy wheel traffic in its six plants. Use of a recently developed method of sawing concrete floors before breaking worn or damaged areas has greatly facilitated maintenance.

Perimeter of damaged areas is sawed 1/4" deep with the concrete saw to provide a plane of weakness for fast, neat air-hammer breakout. Breakout fracturing



Use of saw in repairing concrete floors results in smooth surface and saving of material

is confined within the sawed area, leaving the surrounding flooring free of hidden fractures. Smooth, straight shoulders of the patch end necessity of feathering and a smooth surface remains after replacing. Since patch is cut to exact size, saving in replacement material results.

Another way in which the unit is employed is in sawing of trenches for utility lines, air lines, sewer lines, and conduit. Large or small bases for machinery installations can also be sawed with it.

Variety of models of concrete saw are available. Two gasoline powered units, of 7½ and 13½ hp, and three electric powered models can be obtained.

(ConSaw concrete saw is product of Clipper Mfg. Co., Dept. CP, Suite 619, 2800 Warwick, Kansas City 8, Mo. . . . check CP 1383, pgs. 2 & 3.)

<u>WHY</u>

Gates V-Belts Wear Longer-



The CONCAVE SIDE (U.S. Patent No. 1813698) is what gives the Extra Wear!

Take any straight-sided V-Belt (Fig. 1) and bend it as it bends in going around its pulley. You will clearly see its sides bulge out (Fig. 1-A). These sides therefore press unevenly against the V-pulley and this causes extra wear at the point shown by arrows (Fig. 1-A).



Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2).

You will see the precisely engineered CONCAVE SIDES fill out to an exact fit in the sheave-groove (Fig. 2-A). The sides press evenly against the V-pulley. All wear is distributed uniformly across the full width of the Gates Vulco Rope—and this means longer belt life and lower belt costs for you.







Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the Gates Vulco Rope!

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

V-Belts — Hose Molded Rubber Goods for industry World's Largest Maker of V-Belts



VULCO ROPE PROVES

THE GATES RUBBER COMPANY . DENVER, U.S.A.

When inquiring check CP 1384 on handy form, pgs. 2-3

SING



Solves Corrosion and Temperature Problems...

With the new Type 9 John Crane Mechanical Seal, proper sealing of chemicals and corrosive liquids is no longer a factor. Its flexible wedge and sealing rings

are molded of the remarkable new plastic Teflon, which is not affected by any industrial chemical.

The successful development of two years research and field testing, this revolutionary seal handles corrosive liquids never before controlled effectively by conventional, flexible type mechanical seals. Thus, John Crane designing experience is effectively combined with the unique properties of Teflon: chemical inertness, extremely low friction and high heat resistance. Type 9 Seal can be employed at temperatures up to 500°F.

WRITE TODAY FOR NEW BOOKLET

describing the John Crane Type 9 Shaft Seal. Crane Packing Co., 1821 Cuyler Ave., Chicago 13, Illinois.



When inquiring check CP 1385 on handy form, pgs. 2-3

CONSTRUCTION

Variety of operations performed by drill press . . .

machine is efficient on long production runs

Uses: Designed for multiple operations involving drilling, tapping, reaming, burring, and chamfering, machine is said to be efficient on long production runs.

Features: An interesting feature on the Production Model is drill head positioning attachment. This control unit gives each drill head assembly four inches of vertical adjustment at any one setting. Positioning attachment can be set at any point on the column. After locking in place, it swivels around column with drill head and moves drill head up and down column by means of an enclosed worm gearing.

Work table with cast in ribs is accurately machined so that jigs and fixtures line up square with spindles. Large coolant grooves slope to rear where a built-in chip trap prevents chips from clogging coolant drain. This helps keep floor around work station clean and



Spindle speeds range from 720 to 4325 rpm

dry. Work table measures from 14 x 15 inches for single spindle model up to 14 x 55 inches for the four spindle model. Work table can be set upon a bench or mounted on heavy cast legs.

Description: Four types of press, equipped with from one to four drill heads, are available. Each drill head is essentially company's 14" Precision Model drill press.



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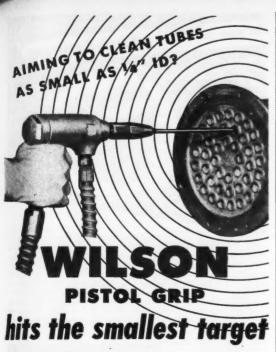
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TUBE C

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When inquiring check CP 1386 on handy form, pgs. 2-3



Cleaning small tubes is often a difficult production problem in refinery and chemical plants. But Wilson Engineers have developed a fast, efficient, low-cost solution in the Pistol Grip Tube Cleaner, which thoroughly removes deposits from tubes as small as 1/4" ID. This production tool is another Wilson first in tube cleaning equipment.

The Pistol Grip weighs only 3 lbs—no more than a 12" Stillson wrench. It provides the operator with one-hand control for cleaning small, straight tubes of \(^1/_4\)" to 1" ID in sterilizers, hot water heating units, lube oil heaters, oil pre-heaters, heat exchangers and other small bore tube apparatus.

Write for Bulletin 1046

Be sure to see our

EXHIBIT at BOOTH 31

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Representatives in all principal cities
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Cable address: "Tubeclean" New York

TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 1387 on handy form, pgs. 2-3

Simple belt tension release provides quick speed changes on this model. Free-floating spindle eliminates side thrust and whip, and sealed ball bearings simplify maintenance.

Built-in work light around each drill head gives good illumination and prevents shadows around work area. Either a 1/3 or ½ hp motor may be installed. Approximate spindle speeds range from 720 to 4325 rpm. Maximum capacity is 7 inches from spindle to column and 18 inches from chuck to table. Production Model takes standard company drill press attachments and can be tooled for a variety of job set-ups.

(Production Model drill press is product of South Bend Lathe Works, Department CP, 425 E. Madison Street, South Bend 22, Indiana . . . or for more information check CP 1388 on convenient Reader Service slip, pages two and three.)

Advice on use of asbestos electrical insulation

Two electrical insulations made of purified asbestos—and called Quinterra and Quinorgo — are described in 32-page, two-color booklet. Publication is both a manual of facts and a descriptive brochure.

Tables giving test data on physical and electrical properties are included for the designer of electrical equipment. For the production man there is advice on application techniques and equipment, including step-bystep photographic coverage of methods now in use. Subjects for picture stories range from heavy duty lifting magnets to hair curlers.

Sectional diagrams show how, in a single piece of equipment, Quinterra and Quinorgo are used in many different places — for core tubes, layer insulation, wire wrapping, interlaminate insulation, end washers, and final wrapper insulation.

"Quinterra-Quinorgo" is issued by Johns-Manville, Department CP, 22 E. 40th Street, New York 16, New York. When inquiring specify CP 1389 on convenient Reader Service slip, pages two and three.



Check your problem. It may be in the handling of caustics or acids...solvents or gases...hot liquids or other chemicals.

Check "John Crane's" complete line of packings for the chemical industry. You'll find that "John Crane" engineers have designed and developed a particular type of packing to meet your individual applications or service condition.

Check "John Crane" for types and sizes. You'll find an exceptionally wide range of metallic, semi-metallic, plastic, fabric and Teflon* packings...spirals, coils, sheets and die-formed rings and sets to fit all stuffing boxes.

Check "John Crane" for quality and availability. Only the finest materials, binders and lubricants are used, forming a resilient, flexible, non-frictional strong packing. Completely stocked warehouses throughout United States and Canada give you prompt service in the quantity you need.

Check with "John Crane" engineers for recommendations and assistance you need for handling even your most difficult applications. Send for fully illustrated catalogs. Crane Packing Company, 1821 West Cuyler Avenue, Chicago 13, Illinois.

*Du Pont trademark for tetrafluoroethylene resin.

CRANE PACKING COMPANY

When inquiring check CP 1390 on handy form, pgs. 2-3

NOW...

EXPANDED PLANT and PRODUCTION speed deliveries

of



• The huge expansion of the chemical industries gave Haveg an order backlog that resulted in long deliveries and forced some of our customers to seek substitutes or to use less satisfactory materials.

Actually there is no substitute for Haveg equipment with its superior resistance to corrosives. Haveg can be easily repaired. It can be machined and resurfaced. It can be altered in the field. When it comes to long service life and a minimum of maintenance Haveg has a proven record.

Now the Haveg Corporation has good news to report. New equipment and a drastic streamlining of manufacturing techniques have practically doubled plant capacity. From our Marshallton, Delaware factory you can get deliveries as listed at the right.



PIPE AND PIPE FITTINGS



From stock up to two weeks

DUCT



Two to four weeks

CYLINDRICAL TANKS AND TOWERS



Two to four weeks

TANKS AND TOWERS



Four to eight weeks

ALVES, BIFURCATORS



Two to ten weeks

CALL YOUR HAVEG SALES ENGINEER FOR TECHNICAL ASSISTANCE

When you need advice, help and emergency supplies of amazing Haveg cement, call your nearest district office. A Haveg sales engineer knows how to help you fight corrosion all the way. Ask to see his photo book showing the wide variety of Haveg molds and the machining possibilities of the material. WRITE TODAY for 64-page technical bulletin F-6. It gives complete information about Haveg, the material and the company that can help you solve your corrosion problems.



CORPORATION NEWARK 7, DELAWARE

FACTORY: MARSHALLTON, DELAWARE . Wilmington 3-8884

When inquiring check CP 1391 on handy form, pgs. 2-3

ATLANTA Exchange 3821

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HARTFORD 5 86 Farmington Ave. Hartford 6-4250

4101 San Jacinto Jackson 6840

HOUSTON 4 LOS ANGELES 14 523 West Sixth St. Mutual 1105

> ST. LOUIS 17 2683 Big Bend Blvd. Hiland 1223

SEATTLE 7 5600-14th Ave., N.W. Hemlock 1351

CONSTRUCTION

Ten colors available in stainless steel vinyl coating . . .

resists moisture, chemicals, and is odorless when dry

Change of pigment makes possible the manufacture of ten different colors in manufacturer's coating for stainless steel. Formula for product, known as Steelast, is basically the same as company's Stainless Steel Coating, in that both use a vinyl plastic vehicle.

Film is said to be impervious to moisture, resistant to most chemicals, and is odorless and nontoxic when dry. Colors include black, white, gray, ivory, green, red orange, and yellow.

Uses in which product offers advantages over other coatings are said to be for protection and finishing of metal surfaces on original equipment; and maintenance of machinery, pipes, tanks, duct work, and metal building materials, indoors and out. Application can be by spraying, brushing, or dipping. Finish will withstand constant wet heat up to 180°F and constant dry heat up to 300°F. It dries to

handle in 30-60 minutes after spraying; 2-3 hours for recoating. It may be force dried in approximately ten minutes. Coating can be applied to rusted or bare unrusted metal after surface

has been treated, or over painted surfaces that show positive after pretest with primer. It is available in quarts and gallons. One gallon covers up to 600 sq ft. (Steelast is product of Steelcote

Mfg. Co., Dept. CP, 3418 Gratiot St., St. Louis, Mo. . . . or reader may secure more information by checking CP 1392 on convenient Reader Service slip pages 2 & 3.)

Catalogs socket-head cap screws

Bulletin catalogs features and uses of line of hex socket cap screws, which are made in sizes from No. 0 to 1 inch. Illustrated price list giving complete specifications accompanies bulletin.

Bul 876 is issued by The Bristol Co., Dept. CP, Waterbury 20, Conn. When inquiring specify CP 1393 on convenient Reader Service slip between pages two and three.



Waukesha makes P.D.* Sanitary Pumps exclusively - and they all work to your benefits, whether your product is liquid, semi-liquid, creamy or chunky. With Positive Displacement pumping, for instance, you eliminate the turbulence, churning, agitation and aeration so damaging to most products. For the Waukesha needs no "Buzz-Saw" speed to overcome high pressures or achieve volume production. Through its gentle, slow speed action, large open chambers, positive twin blade impeller delivery, your product comes out as perfect as it goes into the Waukesha, without damage or

Write for details on the advantages of Waukesha Pumps in your plant.

WAUKESHA FOUNDRY CO. WAUKESHA, WISCONSIN



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When inquiring check CP 1394 on handy form, pgs. 2-3



Locked-in Strength Cross bars are locked in place under 1600 tons pressure



Can be fabricated from a variety of metals

OPEN STEEL

FLOORING

Gives you all

these

Service Features!

FREE CATALOG Write today



Clinch-Lock Cross Bars



Dravo Building, Fifth and Liberty Aves., Pittsburgh 22, Pa.

al Distributor for THE TRI-LOK COMPANY



When inquiring check CP 1395 on handy form, pgs. 2-3

Any size, shape, ID, or OD featured in coil bobbins

Uses: For RF coils, IF coils, push-pull solenoids, switching, timing and reversing circuits, and other applications.

Features: Mult-flange coil bobbins are available in any size, shape, ID, or OD. They are said to possess 15 to 20 per cent greater strength, yet are light in weight.

Description: Spirally wound under pressure, bobbins are controlled and inspected to meet specifications. Cores are made from dielectric kraft, fish paper, acetate, or combinations. Good insulation,



15 to 20% greater strength offered, with less weight

heat dissipation, and moisture resistant characteristics are assured. Bobbins can be fitted with flanges to any specification: plain, slotted, punched, or fitted with terminal leads. They may be embossed or recessed to fit any type of mounting.

(Product of Precision Paper Tube Co., Dept. CP, 2051 W. Charleston St., Chicago 47, Ill. . . . or for more information check CP 1396 on handy form, pages 2 and 3.)

Stoneware, resin, steel chemical process units—standard, tailor-made

Sixteen-page, 2-color catalog is a presentation of maker's complete line of chemical processing equipment fabricated from chemical stoneware, glass reinforced furan resin (Permanite construction), and steel lined with thermoplastic sheet (Pyroflex design).

Items of equipment (standard and tailor-made) which are pictured, specified, and described include: absorbers, containers, heat exchangers, pipe & fittings, tower packings, etc. Manufacturer maintains a complete engineering service in design and application of equipment.

"Chemical Equipment" catalog is issued by Maurice A. Knight, Dept. CP, Kelly St., Akron, Ohio. When inquiring specify CP 1397 on handy Reader Service slip, pages 2 and 3.

367% Longer Service

Castings

An example of what you can expect from INCO



This "S'® Monel sand cast impeller served without trouble for 22 months, 367% longer than when other metal was used for impellers. "Coke breeze" (small broken-off coke particles) which mixes with circulating water during quenching operation did not wear down "S" Monel even though 1690 tons of coke per day were from incandescence to below burning point in this gas company installation. Impeller was replaced because other pump parts had worn out.

Whether you need a replacement part or a component for new equipment . . .

You can expect extra advantages when you order castings from Inco . . . in Inco Nickel Alloys.

Here's why.

Inco gives you any size casting in any practical shape, of any weight from ounces to tons. Even castings you previously thought impractical to produce in Monel®, Nickel or Inconel® can often be cast by Inco's specialists.

Inco gives you dependable high quality castings because they are made to meet or exceed government specifications.

And you get the benefit of Inco's help in solving your metal problem based on wide experience in field and laboratory testing of the Nickel Alloys.

So when you need a sand or centrifugal casting to withstand destructive service conditions, think of Nickel Alloys. Every one is the product of Inco research, especially developed to withstand the rigors of corrosion, abrasion, erosion and galling. And when you think of Nickel Alloy castings, think of Inco's own foundry... your outstanding source of supply.

Consult your Distributor of Inco Nickel Alloys for the latest information on the availability of Inco Castings. Remember, too, it always pays to anticipate your requirements well in advance.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street, New York 5, N. Y.

Inco Castings SAND, CENTRIFUGAL, PRECISION

When inquiring check CP 1398 on handy form, pgs. 2-3



What Is **Communication by Telescriber"?**

(Reading time — 80 seconds)

WHAT Is a Telescriber?

A telescriber is a communication instrument which instantly transmits messages in the sender's own handwriting, from one point to one or more remotely located stations.

WHERE Are Telescriber Systems Used?

In any organization (regardless of size) where there is a need for instant, frequent, accurate written contact between departments or buildings.

ARE ALL Messages Received at Each Remote Station?

Selector keys permit complete system flexibility. Messages are received only by those stations chosen by the writer. All messages and signatures are in the same handwriting as the original.

CAN BUSINESS Forms Be Used in the Telescriber?

Yes. The TelAutograph 'Instan-Form' telescriber is available where instant communication on business forms is desired.

WHAT ARE Some Accepted Uses of TelAutograph Telescribers?

Production and Quality Control • Materials Handling • Sales Order • Maintenance Control • Dispatching • Central Files • Work-In-Process, etc.

CAN I Determine Whether a Telescriber System Would Improve Our Operation?

A "Communications Guide" is available without cost to aid you in analyzing your different communication problems.

CAN WE Get Further Assistance Without Becoming Obligated?

Yes. It is standard TelAutograph Corporation policy to have its field staff aid in making analyses and offering recommendations. This is done without pressure or obligation.

HOW CAN We Obtain the "Communications Guide" and Other Information?

Send your request to Department H-35 at the address below. It will be honored promptly.

TelAutograph corporation

16 West 61st Street New York 23, N. Y.





When inquiring check CP 1399 on handy form, pgs. 2-3

CONSTRUCTION

Soldering problems solved with test kit . . .

set of 24 items facilitates choice of proper flux

Guesswork is eliminated in finding the answer to soldering problems by the use of test kit, according to manufacturer. Set of 24 items enables one to know immediately what flux to use for a specific soldering operation.

Included among the 24 items are test quantities of fluxes, thinners, residue removers, and chemical wire strippers. Soldering flux chart is also furnished, describing each flux and its applications. Each flux is rated for use in soldering more than 20 metals and alloys.

In addition, chart gives relative solderability, solvents for residues, di-electric strengths, and corrosion resistance, among other facts that will be of assistance in attaining trouble-free soldering.

(Divco Soldering Flux Test Kit is product of Division Lead Co., Dept. CP, 7742 W. 61st Place, Summit, Ill. . . . or for more information check CP 1400 on handy form, pages 2 and 3.)

Self-sticking label is printed form with write-on space

For identification pur-Uses: poses on a wide variety of equipment or parts.

Label is a pre-cut, Features: self-sticking printed form combined with write-on space. Printed form designates disposition of labeled part. Different color backing is provided for each wording. Write-on space is for date, reason, and initials.

Description: Labels are mounted on dispenser cards, which serve as portable writing boards. Pen, pencil, or ballpoint is suitable for writing on label, which is filled out before application. Label can then be placed on rough or irrgular surfaces, or in any hard-to-reach place. In addition to stock, special labels can be made to order.

(Product of Dept. 135 W. H. Brady Co., Dept. CP, 727 W. Glendale Ave., Milwaukee 12, Wis. . . . or for more information check CP 1401 on handy Reader Service slip, pages 2 and 3.)



When inquiring check CP 1402 on handy form, pgs. 2-3



When inquiring check CP 1403 on handy form, pgs. 2-3

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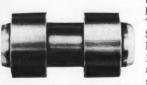
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Hubs can be easily removed from driver or driven shafts of Spacer gear coupling

Similar in function and general design to the conventional flange-and-bolt Spacer types, gear coupling makes it possible to remove the hubs from either shaft without disturbing mountings of connected units. However, due to its simplified method of closure, Spacer type gear coupling can be assembled and disassembled more quickly than other types, according to manufacturer's report.

Consisting of flexible hubs on both driver and driven shafts, coupling is available in stock sizes from 7/8



Spacer coupling can be easily assembled and disassembled

to 3 with 4 to 80 hp per 100 rpm. The center unit, or Spacer, ranges in length from 43/8 to 37/8" and has teeth at either end, cut in such a manner that they mate with each sleeve in a spline fit. These connections

have no angular or off-set flexibility, but allow for end-float. The two sleeves connect the driver and driven units through the coupling.

(Manufactured by Sier-Bath Gear & Pump Co., Inc., Dept. CP, 9252 Hudson Blvd., North Bergen, N. J. . . . or for more information check CP 1404 on convenient Reader Service slip between pages

Three additional colors available in paint reported to stop rust in one application . . .

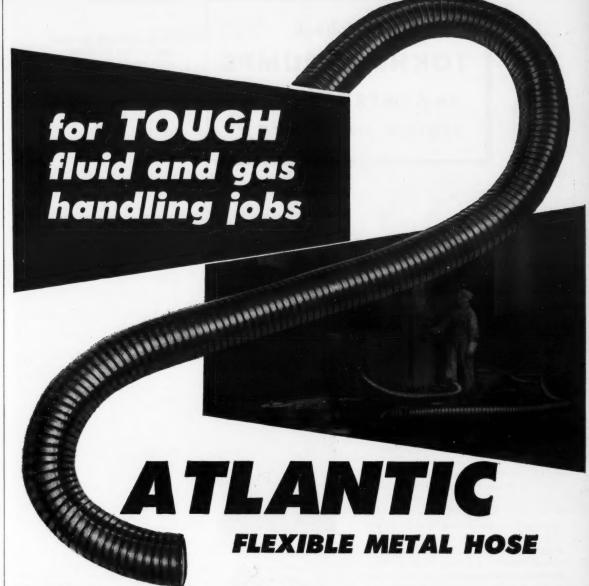
can be easily applied without wire brushing, scraping, or sandblasting

Expansion of manufacturer's line of anti-rust paints, said to stop rust in one application, includes three additional colors. Finish can now be obtained in red, gray, and green, in addition to the standard black, aluminum, and clear.

For use on all metals, both indoors and out, colors are said to eliminate need for a clear base coat except where other paints are desired as finish coats. Product can be applied right over rust without wirebrush, scraping, or sand-blasting, according to manufacturer. Finish penetrates rust layers and adheres tightly to surfaces beneath. It forms a secure seal which resists moisture, temperature changes, chemicals, acids, and fumes.

Another important feature of paint is that it can be applied effectively over damp surfaces. Paint penetrates through moisture and adheres to metal below. Since it contains solvents which do not thicken appreciably in cold weather, product is said to be ideal for winter use.

(Rustrem anti-rust paints are product of Speco, Inc., Dept. CP, 7308 Associate Ave., Cleveland 9, Ohio ... or reader may secure more information by checking CP 1405 on convenient Reader Service slip between pages 2 and 3.)



Conveying nitric acid for use in batch nitrations is quick death for ordinary flexible metal hose. Sulphuric acid and plating solutions are other notorious killers. When temperature and pressure extremes and adverse handling conditions are also involved, hose replacement is frequent and expensive.

That's why-for tough jobs-it's good economy to specify Atlantic flexible metal process hose. Manufactured to survive the most destructive use, it is unequalled for leak-proof qualities, flexibility, durability, strength and lightness. It performs long after ordinary hose is scrapped and returns real savings in your material and labor dollar.

Whatever your application — conveying, controlling movement and vibration, correcting misalignments, compensating for expansion and contraction — there is an Atlantic flexible metal hose that is best for it.

Available in Seamless or Interlocking construction: Steel, stainless steel, monel, branze. 16"-36" I.D. inclusive with appropriate fittings.

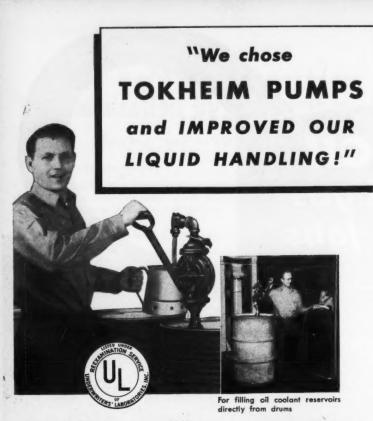
Our engineers have developed flexible metal hase for a number of classified nuclear applications. Though these types cannot be released at present, the experience gained is available for any unusual problems you may have.

Write for Chemical and Process Industries Bulletin 20D. See our Catalogs in Sweet's Files for



ATLANTIC METAL HOSE CO., INC. 106 West 64th St., New York 23, N. Y.

When inquiring check CP 1406 on handy form, pgs. 2-3



You'll find it pays to standardize on TOKHEIMS. These double-action hand pumps have no equal for fast, easy, safe handling of liquids. Stop wasteful, dangerous dripping and slippery floors. Reduce fire hazard and accidents common to other methods of transfer. Save on drum storage space. More usefulavailable with optional parts to handle a wide variety of products. ULapproved for petroleum liquids. Available in hose and spout models - for drums, skid tanks and underground installations. Call your dealer, your Tokheim representative, or write the factory for descriptive literature.

DO YOU HANDLE ANY OF THESE LIQUIDS?

Ace	tates Alcohols Ammonia Anti-
	Cutting and Flushing Oils Lacque
	Plasticizers Salvents — Aromatic
Chlorina	ted, Petroleum Wood and Vegetable Oil

A Tokheim may be used for these and others! Tell us your problem.



For transferring liquids from drums to smaller containers



General Products Division
TOKHEIM OIL TANK AND PUMP CO.
Designers and Builders of Superior Equipment Since 1901
1690 WABASH AVE., FORT WAYNE 1, IND.
Factory Branch: 1309 Howard St., San Francisco 3, Calif.

When inquiring check CP 1407 on handy form, pgs. 2-3

CONSTRUCTION

Horizontal and vertical application possible with paste flux

Uses: For cleaning, and tinning metals to be soldered.

Features: Solder flux paste can be handled in vertical as well as horizontal position.

Description: Product, called Fas-tin, is finely powdered solder, each particle surrounded by a powerful scavenger flux. Paste is said to wet through dirt, rust, or grease, dropping its fine particles of solder to complete tinning action at exact moment surface oxides are suspended in the paste.

Paste is stable. It will not cake or lump when exposed to atmosphere. Metal stays in suspension with no stirring necessary. There is no deterioration and no free mineral acid to cause corrosion. Flux permits any metal combination except aluminum to be joined.

(Product of Farrelloy Co., Dept. CP, 1260 N. 26th St., Philadelphia 21, Pa. . . . or for more information check CP 1408 on handy form, pages 2 and 3.)

Facilities for repairing all types of hose furnished by kit

Maintenance kit recently introduced by company is said to provide user with complete facilities for repairing all types of hose from ½ to 1" ID, regardless of ply.

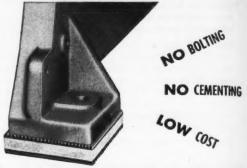
Method of repair consists of a wire band that is formed around hose, then tightened and clamped with specially designed hose clamp tool. A neat clamp is provided with no bulky obtrusions.

According to company, an absolutely tight connection is formed that is permanent and rust proof. Propperly applied, bands will withstand pressures up to 500 psi.

Kit comes equipped with one Jr. Hose Band Tool and 20 bands each for sizes including ½, ½, ¾, and 1" ID hose.

(Sav-A-Hose maintenance kit is product of Squire-Cogswell Co., Dept. CP, 4140 N. Kedzie Ave., Chicago 18, Ill. . . . or for more information check CP 1409 on handy Reader Service slip between pages two and three.)

It's SIMPLE To Control VIBRATION and NOISE with Elasto-Rib...



Elasto-Rib effectively stops transmission of vibration and noise by utilizing the elastic and damping properties of both cork and rubber.

It is fast and easy to install. For most machine applications, no bolts, lag screws or cement are required. Sheets $24^{\prime\prime}$ x $36^{\prime\prime}$ can be sawed or cut to size as needed.

New, illustrated booklet tells all about Elasto-Rib and how to Install it. Ask for ER-701 and free sample.



When inquiring check CP 1410 on handy form, pgs. 2-3

HARPER

Everlasting Fastenings by the Dozen or the Million!

- Specialists in bolts, screws, nuts, rivets, washers and fastening accessories!
- In brass, bronze, copper, aluminum, stainless steels, Monel!
- For all problems involving corrosion, heat, abrasion, stress, appearance!
 America's largest producer of
- non-corrosive fastenings!

 Larger stocks, greater selection
- over 7000 items!

 Deliveries from nearby ware-
- house and distributor stocks!

 Ask for complete Harper Price
 List and Stock Book!



EVERLASTING FASTENINGS

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When inquiring check CP 1411 on handy form, pgs. 2-3

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Fabrication of fiberglass tanks to desired size from flat stock eliminates special molds . . .

provides economical unit that resists corrosion and withstands temp above 212°F

Technique of fabricating tanks from fiberglass flat stock eliminates the need for special molds for units ordered to specified size. Result is an economical, non-corrosive unit that withstands temperatures above the boiling point of water. Tanks, which resist chemical attack from all commonly used acids in normal concentration, are also electrically non-conductive.

Manufacturer is building the tanks to order in all required sizes from the smallest possible up to a maximum of 12' length or width by 4' depth, or 12'



ed.

NC.

Fiberglass tank is sturdy

length and width. Product is straight-sided and square-cornered, with all joints pressure-bonded. Depending on size of individual tank, flat top flange varies in width up to 4" and in thickness up to ½". As size and capacity are increased, walls are made thicker to provide required strength.

These uniformly thick walls, reinforced with horizontal ribs where necessary, register extremely high impact resistance. Light weight (2 x 2 x 3' tank weighs only about 60 lb) and ease of cleaning are of advantage. If desired, tanks can be equipped with dam overflow and fittings. Also, smooth interiors and exteriors can be impregnated with various permanent colors.

(Product of Laminex Corp., Dept. CP, 994 Jefferson St., Fall River, Mass. . . . or for more information check CP 1412 on handy form, pages two and three.)

Reference booklet on motors and generators

This 50-page publication is a motor and generator reference booklet to assist in selection of motive power to handle most industrial applications. Pamplet is reprinted from 1952 edition of Lincoln's Industrial-Commercial Electrical Reference, published by Electrical Modernization Bureau, Inc.

Detailed descriptions, specifications, and technical data are included for each of the many types discussed. Thirty-four data tables supplement text and illustrations.

Booklet 51R7933 is available from Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring reader may simply specify CP 1413 on handy Reader Service slip between pages two and three.

40% LIGHTER

...easier to move

This short haul moving job cuts furnace down-time from 5 months to 6 weeks. With the Lummus portable heater method, the new oil heater is built on skids near the old one. When construction is completed, the old heater is shut down and dismantled (Picture 1). Then the new one is quickly moved in place on the original heater site (Pictures 2, 3 and 4).









PHOTOS COURTESY THE LUMMUS COMPANY

Moving a 900 ton oil heater is no cinch, but it's a lot easier than budging one that weighs 1500 tons. This 600 ton difference stems from the use of lightweight B&W Insulating Firebrick in place of ordinary heavy firebrick in this portable oil heater.

Simplifying the moving job is only one of the advantages of B&W Insulating Firebrick . . . one more reason why The Lummus Company specified this lightweight brick for many portable heater installations.

Of even greater importance is the fact that B&W IFB store and conduct less heat. Thus they cool off fast, reduce down-time, make possible quick access to the

furnace for inspection. Installation costs are cut, too, because these lightweight brick can be cut, drilled or shaped with ordinary woodworking tools. What's more, these lightweight brick may be supported or anchored with ordinary carbon steel. There's no need to use expensive, heat-resisting alloys.



B&W REFRACTORIES PRODUCTS — B&W Allmul Firebrick * B&W 80 Firebrick * B&W Junior Firebrick * B&W Investigation Firebrick * B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment...

Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Yessels . . . Alloy Castings



Clark Pressure Reducing and Regulating Valves

are precision-made for positive pressure control on air, gas or steam lines.

Where different types of equipment, with varying pressure requirements, are operated from a common line, Clark Regulating Valves can be depended on to deliver automatically the "just right" pressure to each.

Save on fuel, maintenance and protect expensive equipment. Ask your Clark representative to specify the right Clark valves for your needs . . . or write us direct.



Pressure Reducing Valve. Diaphragm Operated-Single Seated Valve. Sizes 1/2" to 11/2" for initial pressures up to 250 P.S.I. Reduced pressures to 85 P.S.I.



TYPE CRV

QUICK-CLEANING STRAINERS

Remove dirt, scale and grit from steam, fluid and gas lines. Sizes pressures to 250 P.S.I.

TYPE ORV

Pressure Reducing Valve. 3/8" and 1/2" Single Seated, Spring Loaded, Diaphragm Actuated. For initial pressures to 250 P.S.I. Reduced pressures to 200 P.S.I



MANUFACTURING COMPANY 1830 EAST 38th STREET

CLEVELAND 14, OHIO Distributors and Representatives in all major cities

When inquiring check CP 1415 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Close tolerances of 0.0001" are maintained by wet blasting machine . . .

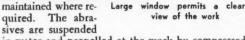
> unit has pushbutton controls and pump that can't plug up

Machine is intended for precision cleaning Uses: and finishing operations involving small pieces that can be lifted and handled manually. Some typical applications are in the manufacture and maintenance of glass, plastics, and the smaller rubber molds.

It can be used in the reconditioning of valves, pistons, rods, oil burners; and surfacing tools, such as drills, reamers, and taps before and after plating. Other applications include cleaning oxides from tungsten carbide tips before brazing them to cutting

tools and blending different types of finishes on aluminum. It can also be employed for removing heat treat scale, de-burring, cleaning out recesses in embossing punches and knurled press rollers, and cleaning for general inspection.

Features: Such fine mesh abrasives are used with machine (80 to 2500 mesh) that close tolerances in dimensions are maintained. Sharp corners, lines, and lettering in patterns remain undamaged. Tolerances of 0.0001" can be maintained where required. The abra-



in water and propelled at the work by compressed air. Slurry is made up of 25 lb of abrasive and 5 gal of water.

Another advantage of the machine is the pushbutton controls, which are located on one central control panel convenient to work station. To start unit, it is merely necessary to turn on the light and push two other starting buttons. No valves need be opened or closed in either starting or stopping.

Another feature is the vertical pump for slurry agitation and recirculation. It is adaptable to rugged service, and because of its position, all suction piping, valves, and fittings are eliminated. It is always primed by flooded-type suction. Loss of slurry through leakage cannot take place. It is said to be virtually impossible for the abrasive to plug the pump impeller when the machine is shut down. Another important item is that the hopper need not be drained before pump is removed.

Wet blasting machine is 2' 6" long Description: by 2' 6" wide by 6' 11" high. It has a blasting



1. DOUBLE SEALED . . . metal-tometal seal plus Teflon insures vacuum tight connection.

2. EASY TO USE ... and reuse ... install fast.

3. FATIGUE PROOF design and operation.

4. PRESSURE SAFE construction exceeds tube strength.

5. LOW INITIAL COST . . . interchangeable parts.

Over 1200 combinations for tubing through 1" O. D. . . . ready for prompt shipment through leading Stainless distributors.

THE SPECIAL SCREW PRODUCTS CO.

5445 Dunham Rd., Bedford, Ohio

Send for Proof

Literature covering Koncentrik fittings, and Powell valves with ma-



When inquiring check CP 1416 on handy form, pgs. 2-3

172

CHEMICAL PROCESSING

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compartment 30" square and 2' 7" high. Unit has one vertical sliding door, 1' 101/2" wide and 1' 7" high. Rotating work table, 15" in diameter, is available for holding the work in the blasting compartment of the unit.

Machine has one set of armholes on the front of the cabinet. Operator stands outside the cabinet. with his arms extended through the gauntlets, and manipulates the abrasive gun toward the work with his hands while operating the compressed air valve

with his knee. When blasting is finished, work is rinsed in a twin - compartment auxiliary tank. Ferrous parts are rinsed in inhibited water. Immersion heaters are available for the water, so that parts dry faster with less chance for oxidation.

ceiling, but bottom Rubber hose is used

Machine has a conveniently low work of unit is high enough off floor to make good housekeeping possible.

Blasting compartment has rotating table to hold work. Use of rubber hose eliminates noise from water hammer in place of metal

eliminating noise from water hammer. Armholes are equipped with gauntlets, making it possible for every workman to use his own gloves. Smaller parts to be cleaned can frequently pass

pipe wherever practical, facilitating maintenance and

through armholes without necessity of stopping and opening the cabinet door. Gauntlet drainage has been designed so that slurry does not drip down the front of the cabinet.

As a safety feature, machine height is such that average operator will be able to stand on floor without need for a platform. Large window permits a clear view of the work. Possibility of abrasive baking on light well window, thereby decreasing illumination, is eliminated by incorporation of cool fluorescent light.

(Model 30 Liquamatte wet blasting machine is product of American Wheelabrator & Equipment Corp., Dept. CP, 1036 S. Byrkit St., Mishawaka, Ind. . . . or reader may secure more information by checking CP 1417 on handy Reader Service slip between pages two and three.)

No need to search high and wide . . .

for more information on something you read in these editorial articles. A letter to the company listed at the end of the article . . or a mark on the Reader Service slip . . . will bring you what you want. This idea originated with CHEMICAL PROC-ESSING many years ago to help busy men like you!

THE EDITORS





MULLING GIVES YOU POSITIVE CONTROLLED RESULTS

Watch the practiced technique of a chemist's mortar and pestle-the intensive rubbing and smearing actions—and basically, THAT'S MULLING!

Mulling with a SIMPSON Mix-Muller utilizes a special pair of revolving mullers and plows mounted on a stationary pan. The mullers are adjustable and are supported by rocker arms. This leaves them free to ride on the material, creating a true mulling action as they revolve. The results are thorough, more rapid blending.

it will pay you to take a good close look at your mixing operations. Experience has shown that improperly mixed materials can often be the cause of inferior end-products or processes.

The type of mixing equipment you use is, of course, the secret to properly controlled mixing. When you use Simpson Mix-Mullers, you are assured of complete control at all stages of mixing . . . with uniformly blended batches that will be the same—day in, day out as proved by hundreds of successful applications throughout the chemical process, food and ceramic industries.

Built in twelve basic models, in capacities from 1/10 to 60 cu. ft., Simpson Mix-Mullers all give you the time-tested mulling principle of controlled mixing, with emphasis on improved quality at lower mixing cost.

Let a National Engineer show you how these versatile Mix-Mullers can help solve your particular mixing problems. Write for details.



PSON MIX-MULLER "DIVISI

NATIONAL ENGINEERING CO., 624 Machinery Hall Bldg., Chicago 6, Ill.





No. 2,107,541,808

In twenty-five years, Anti-Corrosive has already passed the two billion mark in fastenings of stainless steel! Certainly this is your cue to remember Anti-Corrosive, America's oldest and largest firm dealing exclusively in stainless steel fastenings, when your requirements call for screws, nuts, bolts, rivets, pins or any other fastening of stainless steel! And, although most current production requires priority ratings, there are millions of items IN STOCK, ready for immediate delivery, so check with Anti-Corrosive first for your needs!

FREE—A-N Stainless Fastening Selector

A handy slide-chart which instantly identifies A-N Nos. pertaining to stainless steel nuts, screws, bolts, rivets, cotter pins, washers; gives sizes and other data. Write for "Chart 52E" TODAY! Free catalogue also available.



When inquiring check CP 1419 on handy form, pgs. 2-3

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CONSTRUCTION

Wasted effort eliminated ! by design of wheel pipe cutter . . .

permits power to be applied directly to cutter wheel

Uses: For cutting pipe.

Features: Changes in cutting design permit power to be applied directly to power wheel, eliminating wasted pressure or effort. Tool is rugged but light. According to manufacturer, its shape has been engineered for working comfort, balance, speed, and easy handling. Description: Coated with a tough, long-wearing, oven-dried lacquer finish, wheel pipe cutter is



Wheel pipe cutter offers speed and easy handling

available in two sizes — No. 2 for $\frac{1}{8}$ to 2" pipe — and No. 4 for 2 to 4" pipe.

Slide block wobble is said to be decreased by closeness of cutter wheel to the slide track of the guide block. Result is excellent tracking and a fine degree of accuracy when pipe is cut.

(Product of Beaver Pipe Tools, Inc., Dept. CP, Warren, Ohio . . . or for more information check CP 1420 on handy form, pages 2 & 3.)

Covers complete line of power conversion units

Eight-page, two-color bulletin describes complete line of metal-lic rectifier power conversion units. Listed are design features, performance and circuit data, dimensions, and ratings. Units are rated from 125 to 250 volts DC.

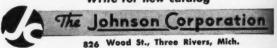
Guide is also provided as an aid in preparing contract specifications which entail company's DC power supplies and exciters. Drawings show outline dimensions of power conversion units.

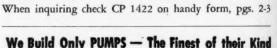
Bul GEA-5658B is issued by General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. When inquiring specify CP 1421 on handy form, pages 2 and 3.



The Johnson Joint has solved many design and production problems as nothing else can. And the Type L, shown above, is helping to fit it into more applications all the time. It has lugs cast on body to permit simple rod support, an arrangement that both simplifies installation and assures proper alignment. Completely packless, self-lubricating and self-adjusting, the Type L Johnson Joint is used on calenders, dryers, mills, etc. — wherever steam or liquids must be admitted to rotating machine parts.

Write for new catalog







A U R O R A
PUMP COMPANY

SUBSIDIARY OF THE NEW YORK AIR BRAKE COMPANY
62 LOUCKS STREET, AURORA, ILLINOIS

When inquiring check CP 1423 on handy form, pgs. 2-3

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CP, 10

Minimum floor space required for electrically operated steam generators . . .

operating at 98% efficiency, boilers are free from low water danger and fire hazards

Series ABC electrically operated steam generators operating on 440 v require less than one-half sq ft of floor space per boiler hp. This is approximately one-third to one-half of the floor space needed for conventional fuel fired boilers in a comparable capacity range. Boilers, which are also designed for 220 or 550 v, operate at 98% efficiency with unity power factor. They are entirely free from low water danger and fire hazards, according to manufacturer.

These electrode steam generators, unlike those utilizing resistance heating elements, can be designed to operate on various voltages at constant amperage. With this design, the kw rating, heating capacity, and steam output vary in direct proportion to the voltage.

In addition to being compact, generators are also light in weight. Units have no tubes to scale or burn out, no feed water treatment requirement, and no need for daily blow-down. Maintenance is reported to be negligible. Series ABC boilers are offered in standard sizes up to 60 boiler hp and pressures up to 500 psi. Larger boilers and higher pressures can be obtained.

(Speedylectric Series ABC steam generators are product of Livingstone Engineering Co., Dept. CP, 100 Grove St., Worcester 5, Mass. . . . or for more information check CP 1424 on handy form, pages 2 and 3.)

Thorough mixing of air and gas furnished by burner unit of pre-mix design

Air and gas are thoroughly mixed en route through gas nozzle of burner unit. Of pre-mix design, burner was developed for gas-firing company's Powermaster packaged automatic boiler. Gas flows through central gas nozzle from gas source. Simultaneously combustion air from blower enters air chamber tangentially, automatically controlled by motor operated damper. Primary pre-mixing air is captured by a stationary air wheel register. This assembly directs pre-mixing air through holes into gas nozzle. Air and gas are mixed in nozzle and outer secondary air ring controls amount of secondary combustion air admitted to chamber. Ignition takes place at this point.

All components are carefully sized for Btu content of gas to be burned and heat requirement of boiler. Register assembly, banks of air holes in gas nozzle, air baffles, and both primary and secondary air rings are each properly selected.

(Voriflow gas burner and Powermaster boilers are products of Orr and Sembower, Inc., Dept. CP, Morgantown Road, Reading, Pa. . . . or for more information check CP 1425 on handy form, pages 2 and 3.)



When inquiring check CP 1426 on handy form, pgs. 2-3

Heyden Chemical doubles its blanketing savings with Second Kemp Generator

Here's a case where simple mathematics paid big dividends at this Garfield, New Jersey plant. When Heyden Chemical—one of the nation's leading producers of formaldehyde, pentaerythritol, salicylic acid, etc.—installed its first Kemp Inert Gas Generator to furnish CO₂ for blanketing a special grinding operation, it was on more or less a test basis. Part of Heyden's constant search for newer, better, cheaper ways to improve its products. The rest of its blanketing needs were still being handled with CO₂ from large storage tanks in the plant.

Immediate Savings with Kemp

Results with the first Kemp Inert Producer were impressive. Now a second (see right) Kemp unit has been installed and actual savings over previous costs are estimated at over \$500 a month for the first year. In addition to dollars saved, Kemp Generators assure a safe, dependable supply of chemically clean inerts. Deliver inerts at a special analysis . . . without fluctuations.

Kemp Designs Versatile

If you still rely on old-fashioned inert sources or are dissatisfied with present inert equipment, let Kemp help you, too. Kemp Engineers will be most happy to help solve your inert problems...show you how you can get similar results with fast-starting, easy-to-operate Kemp Generators. It costs you nothing to investigate. And it may save you real money.

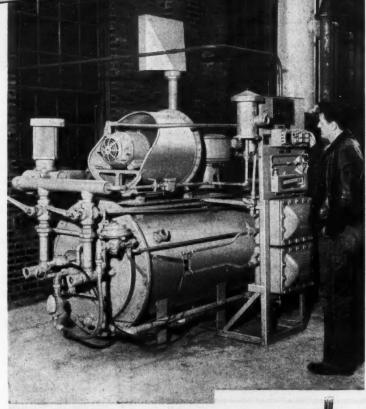


Photo at right shows close-up view of Kemp Industrial Carburetor. Part of every Kemp installation, it eliminates tinkering, waste. Assures complete combustion at all times. Reduces installation costs and maintenance.



For more complete facts and technical information, write for Bulletin I-10 to: C. M. KEMP MFG. CO., 405 East Oliver Street, Baltimore 2, Maryland.

KEMP OF BALTIMORE



INERT GAS GENERATORS

CARBURETORS - BURNERS - FIRE CHECKS
METAL MELTING UNITS - ADSORPTIVE
DRYERS - SINGEING EQUIPMENT

When inquiring check CP 1427 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

One moving part in pressure relief valve . . .

requires less space for installation

Uses: To relieve and equalize excessive pressure of oil, water, or chemicals to a predetermined setting.

Features: Pressure relief valve, developed for both low and high pressures, has only one moving part, is light in weight, and requires less space to install. Despite changes in demand it maintains proper pressures. It protects pumps by allowing flow through pump. This flow, which is always a direct flow back to reservoir, acts as a coolant for pump.

Description: Composed of less than a dozen parts, relief valve is made in an in-line envelope with either internal or external adjustments and locking, or in the side port envelope with external adjustment and



Valve is light in weight

lock. Maximum free flow through valves is equivalent to pipe size used. Valve is produced in both aircraft and standard pipe sizes, being

available in materials suitable to application. Weight of in-line type relief valve for ½" aircraft tubing is approximately 12 ounces.

Valve seat is formed of two hardened steel pieces which are designed, ground, and lapped for long life. No restricting parts affect movement or operation as pressure in system increases. Normally valve is pre-set at factory to pressure specifications.

(Product of Dept. 2-B, Anco, Inc., Dept. CP, One Baker St., Providence 5, R. I. . . . or for more information check CP 1428 on handy form, pages 2 & 3.)

Maintenance of manually-operated self-cleaning strainer is practically nil . . .

compact unit can be mounted in horizontal, vertical, or diagonal position

Uses: Designed specifically to replace basket strainers and to be used where extra coarse cleaning is desired, strainer will remove fine suspended particles from raw or process water and dispose of them in a self-cleaning manner. Unit has many potential applications in chemical plants, steel mills, paper and pulp mills, and other industries. Special units can be constructed from non-corrosive materials to clean liquids such as oil, gasoline, alcohol, and ammoniacal liquor.

Features: Maintenance of this strainer is practically nil, according to manufacturer. Only exertion of effort for operation is a simple twist of the drum ratchet and media is cleaned within a matter of minutes. There are no doors or slide valves to operate. Troublesome and time-consuming operation of continually changing baskets is completely eliminated. Due to its compactness, very little space is required for installation. Unit can be mounted in a horizontal, vertical, or diagonal position.

Description heavy of in which

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Strainer consists essentially of a Description: heavy cast iron housing containing a cast iron drum in which the straining element is retained. Drum



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Strainer can be cleaned by simply twisting ratchet

contains large slots with a coarse wire mesh screen attached to the inside. Liquid to be filtered enters at the bottom of the housing and rises around the outside of the slotted drum. Unfiltered liquid, under pressure, is then forced through screen media which retains the foreign matter, permitting filtered liquid to enter the center of the drum. Clean liquid finally passes through

the outlet, which is diametrically opposite to the inlet. Indication that the media must be cleaned is shown by an increase in pressure drop across the strainer.

By opening a backwash orifice in the side of the housing, a pressure differential between the interior of the strainer and the backwash outlet is created. This difference in pressure causes a reversal in flow which enables water from center of strainer to wash the foreign matter from the outside surface of the media through the backwash opening.

The drum, turned by a manually-operated ratchet, is revolved until the foreign matter is removed and a substantial decrease in pressure drop is noted. Size of the backwash slot is much larger in comparison to the strainer inlet, providing ample room for removal of foreign matter.

To insure proper alignment of the drum within the housing, a bronze bushing is installed at the top of the drum, where the main shaft is connected. Furthermore, to give additional support and to provide free and easy movement, a bronze liner is installed between the bottom of the drum and the housing.

Mesh of the screen is determined by the degree of cleaning that is desired. A limit exists, however, on how fine a degree of cleaning can be accomplished with this type media, due to the structural strength of the screen.

In the event that fine cleaning with manual operation is desired, regular drum may be replaced with a different type that has been drilled with small holes to contain media in the form of stainless steel wire mesh cones, bronze slotted cones, and porcelain type disks.

Screen media used with the regular slotted drum is usually constructed from stainless steel. Other metals such as bronze are used for special applica-tions. Strainer is built in 2 to 24" pipe sizes, for service in working pressures from 75 to 500 pounds per square inch or higher.

(Product of S. P. Kinney Engineers, Inc., Dept. CP, P. O. Box 445, 201 Second Ave., Carnegie, Pa. . . or for more information check CP 1429 on handy form, pages 2 and 3.)



QUALITY Stainless Steel Butt Welding Fittings in Schedule 5-10-40 and tube O. D. Sizes from 1/2" through 24" and 36"

• TRI-CLOVER offers the most complete line of Zephyrweld Schedule 5 and 10 stainless steel welding fittings in sizes from 1/2" through 24" and 36" for use with stainless steel light gauge pipe and tubing. In addition, Schedule 40 fittings are available in sizes through 24".

These quality fittings are annealed, pickled and passivated in sizes through 4". Larger sizes are passivated and may be annealed upon request.

Employing modern, unique and proved methods throughout, these porosity-free fittings are fabricated from stainless steel types 304, 347, 316 and other

Schedule 5 and 10 fitting ends are cut flush for rapid welding. Because of their light gauge, no chamfering is required. Schedule 40 fittings are beveled in accordance with ASA specifications. Fittings can be flame cut for disassembly, used again by re-welding.

See your nearest distributor for full details.



When inquiring check CP 1430 on handy form, pgs. 2-3

plings results in smooth, steady

duces wear on all working parts.

In thousands of applications-

indoors and out-Twin Disc In-

dustrial Fluid Drives are providing

similar savings. For help on your

problems, write Twin Disc or con-

tact your nearest Twin Disc Hy-

HYDRO-SHEAVE®

12.2 for m

draulic Dealer.

"SWEETER" PICKLING

operation, and an end to chain breakage. The Twin Disc Hydro-SHEAVE Drive absorbs starting and THE COMPLAINT: At the Geo. D. Roper Corp. plant, Rockford, Ill., overload shocks, allows the momorer corp. plant, nocktord, 111., metal parts for Roper Gas Ranges tors to build up to an efficient speed mena parts for roper was reages of are processed through a series of before picking up the load, and repickling operations by means of an 185 ft. continuous conveyor. an 185 ft. continuous conveyor.

Driven by two 1½ hp. motors
about 90 ft. apart, the conveyor about your, apart, the conveyor. chain auromatically stops at regular intervals to "dunk" range parts into the pickling tanks, Continuous start and stop operation caused the two motors, originally matched, to work against each other, result. ing in repeated conveyor chain breaks and overtaxed motors.

THE REMEDY: A Twin Disc Hy. DRO-SHEAVE Drive was installed on each motor. With no change in loads or general conditions, motors no longer fight each other.

Normal 4% fluid slip in the cou-

Built for a Lona Life

DISC CLUTCH COMPANY, Rucine, Wisconsin . HYDRAULIC DIVISION, Rockford,

BRANCHES, CLEVELAND . BALLAS . BETROIT . LOS ANGELES . MEWARR . NEW ORLEANS . STATTLE . TULSA

When inquiring check CP 1431 on handy form, pgs. 2-3

CONSTRUCTION

Fluid saved by stand allowing last drop to drain from drum

Tripod oil drum drain stand has been developed to recover the several quarts of oil or other fluid which cannot be reached by a pump ordinarily used to dispense from a standard 55 gal drum.

In use, drum is inverted over screened opening of drum stand, permitting as much as 10 quarts to drain into removable reservoir. Contents may then be fed into



Allows recovery of fluid not reached by pump in drum

smaller containers through a faucet built into stand. Sliding cover fits over mesh opening to keep out foreign matter when stand is not in use. Lugs welded to slanted support rails prevent drum from sliding out of place.

(Weld-Bilt oil drum drain stand is a product of West Bend Equipment Corp., Dept. CP, West Bend, Wis. . . or for more information check CP 1432 on handy Reader Service slip between pages 2 and 3.)

Presents case histories on power distribution

Power distribution systems installed in industrial plants of various types throughout the nation are described and illustrated in 12-page booklet. Systems covered are the radial and secondary selective load-center distribution systems. Case histories emphasize prevention of power shutdowns.

Bul GEA-5896 is issued by General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. When inquiring specify CP 1433 on handy Reader Service slip between pages 2 and 3.

PUMP HIGHLY CORROSIVE FLUIDS & ABRASIVE SLURRIES

POLYETHYLENE

GUM, "NO STUFFING BOXES"



TOUCHES METAL

V A N T O N

NON CORROSIVE

flex-i-liner

Fluid only contacts outer surface of "FLEX.1-LINER" and Inner surface of body block. 35 combinations of rubber and plastic "flex.1-liners" and pump body blocks, Models available for fractional to 20 G.P.M., Vinyl and Com-por "flex.1-liners" also available in Journal to G.P.M. competies. Midely par "flex-i-liners" elso eval pumps to 5 G.P.M. capacities, used in chemical, food, pharm and other process industries— non-contaminating pumping is Excellent for slurries. Write for ture.

NO GASKETS

SELF LUBRICATING

VANTON PUMP CORP.

Empire State Bldg. Dept. CP-5 N.Y., N. Y. When inquiring check CP 1434 on handy form, pgs. 2-3

What is a



A Chambers Granulator:

- 1. Receives bulky, hard-to-feed materials;
- 2. Delivers a granulated product of even, well mixed consistency;
- 3. Carries many overhead tons of dumped loads;
- 4. Generates an even feed for continuous processes manufactured in capacities up to 100 tens per hour; and

5. Mixes (pugs) multiple materials — wet or dry. These features, according to your purpose, are also provided by Chambers Pug Mills in a wide variety of sizes.

CHAMBERS BROTHERS COMPANY PHILADELPHIA 31, PA 52nd & Media Sts.

EXTRUDING MACHINERY SPECIAL

When inquiring check CP 1435 on handy form, pgs. 2-3

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more in pages 2

MAY, 1

Masonry saw blade gives 50% more cutting life . . .

ES"

cutting segments on rim increased in depth Uses: Especially suited to cut glazed brick and tile, terra cotta, sewer pipe, stone, quarry tile, and acid brick.

Features: Cutting segments on rim have been increased 50% in depth to make possible increased blade life. No change in the basic formulas have been made except to increase the amounts of diamond and metal powder 50%. As a result, cutting action of "Super-Rim" series is identical in speed and ease to "Standard" blade specifications. Manufacturer guarantees cutting speeds up to 300% faster than with synthetic abrasives.

Description: Totally safe, since they are manufactured with a solid steel center, blades are available in diameters from 6 to 30". Types are presented for masonry saws, power hand saws, and concrete saws, which have been adapted for "wet" cutting. The different specifications are marketed with a color code system to assure use of correct blade on each kind of material. "Gold" blades are for hard materials, "Blue" blades for medium hard materials, and "Red" blades for soft materials.

Protective packaging style is also presented. Each blade is given rim coating of protective plastic and packaged in a sturdy metal storage container.

(Target "Super-Rim" Diamond Blades are a product of Robert G. Evans Co., Dept. CP, 6315 Brookside Plaza, Kansas City 13, Mo. . . . or for more information check CP 1436 on handy form, pages 2 and 3.)

Berl saddle tower packing made from furan resin for caustic, HF service . . .

2/3rd weight of stoneware, offering less structural weight to towers

Uses: Berl saddle tower packing especially recommended for caustic and hydrofluoric acid service.

Features: Cast from maker's specially developed furan resin materials for good corrosion resistance. Density of the saddles is about 2/3rds that for stoneware, offering the advantages of less structural weight in high towers.

Description: Furan resin construction is designated as Permanite by maker. Sizes standardly available are ½ and 1".

Permanite resists all alkalis (weak or strong), chlorine, hydrochloric acid, hydrofluoric acid, phosphoric acid, and up to 50% sulfuric acid. It is also resistant to solvents such as gasoline, alcohols, ketones, phenol, and glycerine. It is not recommended for highly oxidizing acids.

Light weight does not sacrifice strength and hardness. It is resistant to thermal shock and temperatures to 360°F. Permanite is non-absorbent.

(Permanite Berl saddles are a product of Maurice A. Knight, Dept. CP, Akron 9, Ohio . . . or for more information check CP 1437 on handy form, pages 2 and 3.)

'you can't beat them

Sarco Balanced Pressure Thermostatic Steam Trap No. 9, available in sizes ½" to 2" for pressures to 300 psi. Ideal for individual trapping of process equipment.

for PROCESS EQUIPMENT

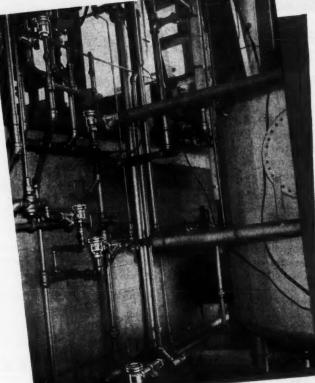
. . . says Mr. Paul H. Todd, owner of Farmers' Chemical Laboratories, Kalamazoo, Mich.

• MR. Todd has reference to the Sarco Balanced Pressure Thermostatic Steam Traps used throughout his efficient plant, equipped with the finest of modern processing machinery.

He selected Sarco No. 9 because:

- 1. Highest capacity per dollar cost.
- The large discharge valve is wide open when the trap is cold, assuring rapid air venting for quick starts from cold.
- 3. Small size, low first cost and minimum maintenance make them ideal for individual trapping (a trap on every coil).
- No adjustments or valve and seat changes are necessary when pressures change. Fewer spare parts to stock.
- 5. Requires no special protection against freeze-ups when installed outdoors.

For full information write for free Bulletin 250-14 to Sarco Company, Inc., Empire State Bldg., New York 1, N. Y., Represented in principal cities. Sarco Canada Ltd., Toronto 8, Ont.



Sarco balanced pressure thermostatic traps removing air and condensate from steam coils and supply lines of large vacuum still with reflux column and condenser at plant of Farmers' Chemical Laboratories, Kalamazoo, Mich.

SARCO saves steam

improves product quality and output

429

ANY

ING |

In production ahead of schedule . . . thanks to



weeks ahead of schedule, it

sliced 40-50% off our estimated installation costs. And what's more, we now have a stainless processing line that we can tear down in a jiffy for clean-out or rearrangement."

"Cost conscious plant men will find Quikupl worth investigating."

BULLETIN Q100



Get the full story of this amazing stainless steel fitting which permits quick assembly and disassembly of stainless pipes or tubing without threading, flaring or welding.



Write for Bulletin Q100 today.

COOPE	R ALLOY
	HILLSIDE, NEW JERSEY
NAME	
POSITION	
COMPANY	
ADDRESS	

When inquiring check CP 1439 on handy form, pgs. 2-3

CONSTRUCTION

Heat losses reduced by fiber glass duct insulation . . .

also has sound absorption properties

Uses: For use on metal cooling ducts. It can be applied to circular ducts, rectangular ducts, and also may serve as a duct liner.

Features: Use of material is said to reduce heat losses, increase efficiency, and save fuel. Since it has excellent sound absorption properties, it can also be used for that purpose. Lightweight material resists fire and can be easily installed.

Description: Super-Fine Fiber Glass can be folded, compressed, or cut to irregular shapes. One square foot of 0.75 lb/cu ft density and one inch thickness weighs only one ounce. Material is available in a variety of densities, thicknesses, roll widths, and roll lengths. Product is vermin proof and will not rot, manufacturer reports.

Temperature range is from subzero to plus 400°F. Use of a special binder extends temperature range up to 600°F.

Insulation is also available with vapor barriers such as reinforced paper, cloth, plastic, and various spray coatings. Under ordinary conditions, material will not corrode metal surfaces. It reduces condensation in air conditioning installations, resists most acids, has no odor, and insulation will not absorb odors.

(Product of Libbey-Owens-Ford Glass Co., Fiber-Glass Div., Dept. CP, Toledo 3, Ohio . . . or for more information check CP 1440 on handy Reader Service slip between pages 2 and 3.)

Report on repellent finishes

Technical bulletin describes methods of applying firm's line of water repellent finishes. Bulletin "Paramul Repellent DC-1 and DC-2" is issued by Textile Resin Dept., American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 1441 on handy Reader Service slip between pages 2 and 3.



Electrically- AIR V

Meets fully Group D, Class 1, National Electric Code Standards of National Association of Fire Underwriters, for wiring in hazardous locations.

The Bellows Explosion-proof Electroaire Valve is a complete packaged unit; 4-way directional slide valve, independent speed controls, low voltage solenoid controls. Three port sizes: 1/4", 3/8", 1/2". Can be arranged for direct connection to or remote control of any air cylinder of suitable capacity. Write for Bulletin AVX-310. Address Dept. CP 553.



When inquiring check CP 1442 on handy form, pgs. 2-3





A powerful, compact motorized unit that will cut costs of mixing, tumbling, cleaning, etc. Scientifically engineered for smooth, safe revolving at speeds of 10, 20 or 40 RPM. Can be loaded by ONE MAN and is easily moved. The power drive has a 3/4" dia. shaft and is equipped with self-aligning bearings. Four 4" dia. Neoprene drive wheels with idler attachments are adjustable to take from 1 to 55 gal. drums or cylindrical containers. Wt. before crating 137 lbs. Furnished with motor, gear reduction unit and tipping lever. Write for complete information.

L *Manufacturing co.* In 757 West Manlius St. East Syrucuse, N. Y

When inquiring check CP 1443 on handy form, pgs. 2-3

Uses:

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Effectiveness of 99% guaranteed in removing nuisance particles from stack exhaust gases . . .

purifier with no moving parts is reported to be virtually maintenance free

For industrial stacks to clean up exhaust steam and vapors discharged to the atmosphere. Purpose of unit is to remove particles such as troublesome oil and process liquors from vapors to prevent them from damaging machinery or nearby buildings or creating a public nuisance.

Unit is guaranteed to be 99% effective, according to manufacturer. It is stated that the greater the velocity through the unit, the greater the

operating efficiency. Exhaust head has no moving parts or filters. As a result, it is reported to be virtually maintenance free with nothing to wear out or clog up.

Description:

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Entrainment laden vapor entering the purifier is engaged by a stationary centrifugal element which imparts a carefully controlled but extremely rapid rotational motion to the vapor. This action guides all dirt particles, guck, oil, and water outward to the walls of the purifier. Here it is drained and ejected out the drain. Clean, dry steam or vapor continues upward



Cutaway view illustrates operation of purifier

and is finally discharged into the atmosphere.

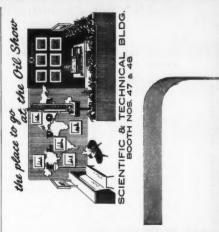
Although fabricated to specification, standard models have a slip-on or flange connection for the stack and a threaded connection for the drain. Units have fabricated stainless steel body and stainless steel centrifugal element.

(Exhaust head purifier is product of Dept. EH, The V. D. Anderson Co., Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio . . . or for more information check CP 1444 on handy form, pages 2 and 3.)

Analyzes use of copper oxides

Folder contains description of copper oxides and instructions for use. It includes an evaluation of methods used to maintain oxidizing conditions during melting of copper and copper base alloys.

Catalog on copper oxides is issued by The Glidden Co., Dept. CP, 1717 Summer St., Hammond, Ind. When inquiring specify CP 1445, pgs. 2 & 3.



ONLY FLUOR

induced draft counterflo cooling towers provide these 6 exclusive features...



Spiral Bevel Gear Speed Reducers
Only Fluor-Western speed reducers incorporate curved tooth spiral bevel gears as standard design. This proven principle provides quieter, smoother, more efficient operation under the rugged conditions of cooling tower service. Other special design features include: oil-bath lubrication; dry air breather; chrome-plated shaft at oil seals; and, low-speed fan shaft mounted on special steep angle thrust and radial bearings to take combined gear thrust, fan thrust, and weight of fan assembly.

Unique Fan Blade Design
The Fluor Type HC Stainless Steel Fan blades, furnished The Fluor Type HC Stainless Steel Fan blades, turnished as standard on every Fluor Counterflo Cooling Tower, are a joint development of The Fluor Corporation and Solar Aircraft Company. Designed specifically for induced draft cooling tower service, their unique air foil handles maximum air volumes at minimum tip speeds and horsepower requirements. Design plus mechanical arrangement eliminates recirculation of air and resulting power-consuming turbulence.

Internal Gusset Plate Construction

Fluor Counterflo Cooling Towers alone make full use of tensile as well as compressive strength of structural members! Their internal gusset plate design duplicates that used in wooden bridge construction. These simple, yet extremely strong joint connectors mean longer tower life, lower total tower weight, fewer and simpler castings, greater ease of erection, and minimum spoilage should the structure be dismantled, moved and re-erected.

Patented Vibration Cut-Out Switch

The Vibration Cut-Out Switch developed and patented by Fluor in 1944 protects tower structure and mechanical equipment by stopping the motor should excessive vibra-tion suddenly occur. In addition to its value as an emergency safety device, the switch can be utilized by the operator as a positive "on-off" switch during routine inspection of tower structure and mechanical equipment. The motor cannot be started accidentally once the switch is placed in the "off" position.

Sloping-Bar Grid Decking
Exclusive Fluor-designed sloping-bar grid decks are of rough-finished 1" select redwood machine-nailed to 1" x 2" cleats-strong enough for use as scaffolding during erection, rugged enough to withstand the erosion of falling water. This means low maintains and the erosion of falling water. This means low maintenance and replacement cost. The sloping-bar design and arrangement of each deck cross member combines the advantages of maximum deck surface with minimum air pressure drop through tower.

Complete Prefabrication of Structure
Only Fluor Counterflo Cooling Towers are completely
prefabricated. This offers many advantages to the operator. Tower parts are "packaged" for rapid delivery,
marked for orderly erection. Erection is faster, easier, at lower cost. All cutting, drilling and nailing is completed at the factory. Prefabrication means standardization low-cost replacement of standard parts that may become damaged over the years. It means uniformity in both performance and appearance.

Contact your nearest Fluor representative for detailed information. You Can Be Sure With Fluor

Engineers - Constructors - Manufacturers

THE FLUOR CORPORATION, LTD. - LOS ANGELES - HOUSTON New York, Chicago, Pittsburgh, Boston, Tulsa, San Francisco, Birmingham and Calgary

Represented in the Sterling areas by: Head Wrightson Processes Ltd., Teesdale House, Baltic Street, London, E.C.1, Englan



When inquiring check CP 1446 on handy form, pgs. 2-3

SING



4 Z TO 250 HORSEPOWER (M.E.M.A. 0 care in fitting coils CATALOGUE

4. Extra QUALITY

NEW ILLUSTRATED

simpreg jo

When inquiring check CP 1447 on handy form, pgs. 2-3

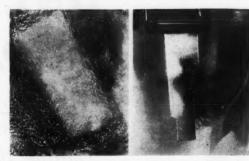
CONSTRUCTION & MAINTENANCE

Sound waves clean metal parts faster and better . . .

grease and dirt are literally "exploded" away with only 40 volts of electricity

Ultrasonic commercial cleaning equipment recently put into operation is said to permit precision cleaning of metal parts at a rate never before equalled by a similar method. Unit is said to be especially valuable where exceptional cleaning quality is required or where parts have fine openings, crevices, and other hard-to-clean forms. Only 40 volts of electricity is required for operation of equipment.

Material to be cleaned is placed in a solvent, either manually or by conveyor, directly in the path of greatest focal intensity of the high frequency sound



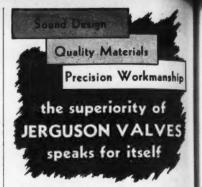
Extreme agitation in liquid at left is caused by sound waves projected from ceramic transducer, the outline of which can be seen a few inches below the surface At right, iron oxide paste, ordinarily extremely difficult to remove, is literally "exploded" off of jet engine blade

waves. In this area an extreme turbulence is created, resulting in a deep and penetrating cleaning action. According to manufacturer, it removes almost instantly all dirt, grease, chips, and microscopic particles from even the most intricately designed and closefitting parts.

First commercial equipment employing the process has been acquired by the Electric Shaver Division of Remington Rand, Inc., Bridgeport, Conn. Fully conveyorized, it is said to be the largest commercial unit ever built for ultrasonic cleaning. Equipment is approximately six feet high and twelve feet long.

Accompanying photographs show method being used for cleaning jet engine blades and the effect of the cleaning. Process holds promise for adaptation to many other industrial cleaning problems.

Key to the process is a ceramic transducer element. Employment of this element overcomes the limitations caused by the size and properties of natural quartz previously used in ultrasonic experiments. This transducer, more flexible than quartz, resembles a six-inch long ceramic pipe, cut in half along the longitudinal axis. Because of the design of the transducer, the sound waves converge to a straight line as long as the transducer itself. Focal area in other transducers has been confined to a single point. Also these ceramic pieces can be connected in series and arranged as desired.



OS&Y Valves for severe conditions



Rugged Jerguson OS&Y Valves are the ideal answer to meet high temperature or corrosive conditions where inside threads can't be

tolerated. Efficient outside thread design eliminates possible freezing and allows the valve stem to work freely at all times.

GA Valves for instrument piping and general use



Tremendous time and cost savings are possible with Jerguson GA Valves. Threaded connections can be reduced from 10 to 3 . . . unions, nipples, reducers, elbows, tees, valve, and bleed valve are combined in one space saving unit.

Jacketed Heated-Cooled Valves



Designed especially for use with heated or cooled gages, Jerguson No. 93 Valves have a surrounding jacket for circulating the heating or cooling medium. They give safe, dependable, leak-tight service.

Globe Valves

Jerguson Globe Valves, furnished in 1/4, 1/2, and 3/4 inch sizes with renewable, regrindable seats. Can be furnished with Stellited stem and/or OS&Y.

All valves shown rated at 3000 lbs. @ 500°F. Send for detailed Data Units . . . or outline your requirements and let Jerguson engineers go to work for you.



JERGUSON GAGE & VALVE COMPANY 100 Fellsway, Somerville 45, Mass.

Offices in Major Cities ess Gage & Valve Co., Ltd., London, Ent Pétrole Service, Paris, France

When inquiring check CP 1448

on handy form, pgs. 2-3

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CHEMICAL PROCESSING

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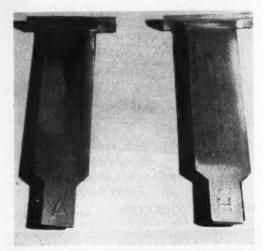
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CONSTRUCTION & MAINTENANCE

Electrical energy is transmitted to the ceramic transducer, converted into sound energy, and projected through a solvent at a frequency of 430,000 cycles per second. Solvent currently being used is trichlorethylene. However, process is not limited entirely to this material. Since a potential of only 40 volts



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Iron oxide paste on jet engine blade at left was removed completely and rapidly by ultrasonic process, as shown at right

is required, transducer can safely be immersed directly in the solvent. This eliminates the complicated sealed containers that are required with other transducer materials and high voltages.

High frequency hypersonic generator used in process is completely protected by numerous safety and overload devices. It has easily adjustable tuning drawers that offer close frequency control.

(Ceramic transducer element used in ultrasonic cleaning process was jointly engineered by the Brush Electronic Co. and Detrex Corp. The Soniclean Process is a development of Detrex Corp., Dept. CP, Detroit 32, Mich. . . . or for more information check CP 1449 on handy form, pages 2 and 3.)

Bulletin describes several types of instrument tubing

Four-page, two-color bulletin describes several different kinds of company's corrosion proof instrument tubing. Types included are: instrument tubing, single-line metal tubing with plastic sheath; Impervapak Metl-Cor, multiple metal harness with polyethylene coating; and Impervak Poly-Cor, multiple polyethylene tube harness with vinyl sheath.

Impervak Metl-Cor is available with 4, 7, or 10 tubes. Impervak Poly-Cor comes with 4, 7, 10, 14, or 19 tubes. Actual tubing installations are illustrated with photographs.

Bul L-6506 is issued by Samuel Moore and Co., Dekoron Tubing Div., Dept. CP, Mantua, Ohio. When inquiring specify CP 1450, pgs. 2 & 3.



When you need gaskets such as those above, which were made for pressure vessel service over 5000 psi, consider this. It takes less time and trouble to turn the job over to J-M Goetze—an organization that has specialized in gasket design and manufacture for 67 years. And it usually costs less in the long run.

Goetze engineers can select the right style for maximum sealing efficiency. They know the correct metals and other factors required for efficient, long-lasting gaskets. Goetze Gaskets are made exactly to the last detail of your specifications and conditions. They are made to craftsmen's perfection . . . with modern machine tools, some of which were specially designed by Goetze for gasket manufacture.

If you need gaskets for high pressure vessels or similar applications, send us a drawing or template for quotation. Or write for further information to Johns-Manville, Box 60, New York 16, New York.



Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING

When inquiring check CP 1451 on handy form, pgs. 2-3



FOR LOADING AND UNLOADING LINES

BARCO'S new, attractively priced, allsteel ball bearing Swing Joints are designed specifically to provide for movement and flexibility in metal pipe loading or unloading lines handling petro-chemicals, oil, alcohol, and other fluids.

MANY STYLES—The Barco line is complete with single swing, double swing, and counterbalance styles to meet every need! Sizes 2", 2½", 3", 4".

BALL BEARING AND O-RING EQUIPPED—In Barco Swing Joints, the ball bearings do not fall out when joints are taken apart! Long bearing provides adequate pipe support. Special O-ring seal eliminates frequent gasket replacement and insures leakproof service over wide temperature range, -40° F. to +225° F.

SIMPLE CONSTRUCTION — Joints can be disassembled for inspection without disconnecting piping. O-rings are easily renewable in the field.

ENGINEERING RECOMMENDATION—Barco will be glad to give you detailed recommendations on joints to use and suggested arrangements for complete loading and unloading assemblies.



NEW!

Send for a copy of new Catalog No. 400 containing complete information on Barco Swing Joints. BARCO MANUFACTURING CO., 537F Hough St., Barrington, Ill. (A Chicago Suburb)

BARCO-The Only Truly Complete Line of Flexible Ball, Swivel, Swing, and Revolving Joints

CONSTRUCTION

Redesign motor frames longer bearing life

Electric motors of company's entire T-type line, with ratings as high as 250 hp, will have modern frames. Higher ratings, from frame size 444 to 586 of drip-proof construction, will offer advantages



Ratings as high as 250 hp available

of rolled steel frames and cast iron end bells, assuring permanent alignment. Bearing caps at the shaft ends, leading to longer bearing life, will be another advantage of the new design.

(Product of General Dynamics Corp., Electro Dynamic Div., Dept. CP, Bayonne, N. J. . . . or for more information check CP 1453 on handy Reader Service slip between pages 2 and 3.)

Variety of valves cataloged

Style 5046

Complete line of valves for many applications is described in 50-page catalog. Manual, electrical, and hydraulic operated types discussed include: gate, control, angle, butterfly, reversing, hot gas, check, and valves for special applications.

Detailed specifications and dimensions are given on each type of valve. Also included are temperature conversion tables, pressure drop chart, table of weights and measures, and tabulated information on properties of gases.

Cat A-205 is available from The Gas Machinery Co., Dept. CP, 16100 Waterloo Rd., Cleveland 10, Ohio. When inquiring specify CP 1454 on handy Reader Service slip between pages 2 and 3.



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MAY,

Condensed Data on the Complete Beach-Russ Line of Rotary Pumps

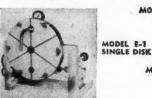
WRITE FOR YOUR COPY...or for as many copies as you may need for distribution in interested departments.

BEACH-RUSS COMPANY

When inquiring check CP 1455 on handy form, pgs. 2-3

Extel Filters FOR LABORATORY AND SMALL LOT PRODUCTION

Model 10 in either stainless steel, hard rubber, or brass, nickel or silver plated, to meet all laboratory filtration requirements, provides the versatility that ranks it "tops" in modern laboratories. Model E-1 is recommended for lab or batch filtration of 5 to 10 gallons. Model EBW is the smaller production unit that has solved hundreds of operations for extremely low initial investment.



MODEL No. 10 CYLINDER TYPE

MODEL EBW FILTER

Experience has proven that the great majority of filtration problems can be solved by our engineers with their seasoned background of filtration experi-



ERTEL ENGINEERING

KINGSTON 3,
Branch Office & Showroom Located in New York City
COMPLETE LINE OF
THOMAS R. Liquid Handling Equipment

a ERIEL

When inquiring check CP 1456 on handy form, pgs. 2-3

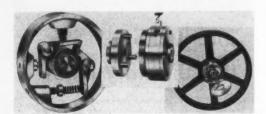
When inquiring check CP 1452 on handy form, pgs. 2-3

Permanently lubed clutch is dust and dirt proof

Overload release clutch can be used over a wide range of speeds and shaft sizes.

Clutch is permanently lubricated and entirely dust and dirt proof.

Clutch can be easily installed on Description: sprocket, chain, belt, and gear drives. It has instantaneous trigger action and is designed to allow



Clutch can be installed on sprocket, chain, belt, or

machines to resume operation at exact cycle point of release. It is said that this clutch will work consistently within close limits. Special sizes can be made to specification.

(Product of Dept. E, Overload Release Clutch Co., Dept. CP, 1162 Stuyvesant Ave., Irvington, N. J. . or for more information check CP 1457 on handy form, pages 2 and 3.)

Corrosive conditions withstood by Neoprene coatings three years in plant test

Neoprene coatings are reported to have resisted the most severe corrosion conditions for three years in manufacturer's own plants. These special formulations, which are added to manufacturer's line of corrosion resistant paints and cements, are NeoCoat, NeoPrime A (for all surfaces except concrete), and NeoPrime B (for concrete surfaces).

NeoCoat is a true plastic, involving polymerization, in which the accelerator is included in the product. This eliminates the necessity of mixing on the job. Polymerization takes place after the coating is applied.

In the plant tests it was found that to stand up in service, a coating had to be built up to a thickness of at least 5 mils to be satisfactory, regardless of its corrosion resistance. Tests showed that it had to be especially effective in covering welds, beads, seams, and edges where coatings most frequently failed. Since it was found uneconomical to apply more than three coats, including the primer, products were formulated to attain the proper thickness within three

(Product of Pennsylvania Salt Mfg. Co., Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. . . . or for more information check CP 1458 on handy form, pages 2 and 3.)

BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND. — IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL

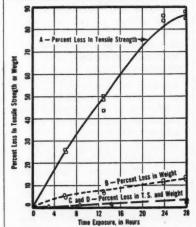
Stress Corrosion and **Season Cracking in Condenser** and Heat Exchanger Tubes

Condenser and heat exchanger tubes made in accordance with A.S.T.M. Specification B 111 are generally supplied in the annealed condition with a medium to fine grain size. If properly handled, they are free from internal stresses. However, if they are subjected to applied stresses produced by high operating pressures or restraint of thermal expansion and contraction, or to residual stresses such as developed by overrolling, flattening, bending, denting, and rough handling, they may fail from either stress corrosion or season cracking when exposed to certain corrosive environments.

Factors Producing Stress Corrosion Cracks

Season cracking or stress corrosion of copper-base alloys depends upon the

Effect of Internal Stress on Corrosion of Yellow Brass (A and B) and 70-30 Cupro Nickel (C and D) Tubes in Concentrated Ammonium Hydroxide Vapors at 250°C.



following factors:

- (1) Composition of the atmosphere or liquid surrounding the stressed metal (ammonia, mercury and mercury salts are the biggest offenders).
- (2) Composition of the alloy.
- (3) Magnitude of the stresses.

The combined action of at least three substances: ammonia or ammonia-producing material (organic and inorganic substances containing nitrogen), water and oxygen usually are necessary to produce stress corrosion cracks in copper-base alloys. These three substances may be found where condensation of moisture from a gas, air or steam forms on the cool tube surfaces.

Oxygen and traces of ammonia from various sources may dissolve in the water film. The corrosion products which form under these conditions frequently are dark blue, black or dark brown with only a small amount of metal being corroded. Failure may develop within a few hours or after several years depending upon the magnitude of the stresses and the corrosive

Influence of Alloy Composition

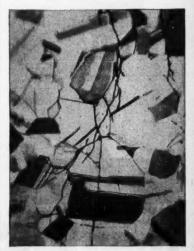
The resistance to season cracking and stress-corrosion cracking of copper-base alloys is influenced by their compositions. Briefly, alloys with higher copper content resist cracking better than low copper alloys. A simple procedure which graphically shows this difference in resistance to season cracking consists of plotting the per cent loss in weight and the loss in tensile strength of corrosion test specimens against time of exposure to ammonia solution.

Typical curves for yellow brass (A and B) and 70-30 Cupro Nickel (C and D) are shown. The spread between the curves A and B, showing the per cent loss in tensile strength and weight, reveals the presence and intensity of season cracking. When no residual stress is present in brass, the tensile loss curve A becomes identical to the weight loss curve B, indicating that no cracking has occurred.

Curves C and D for highly stressed 70-30 Cupro Nickel show that the curves for loss in weight and for loss in tensile strength are identical, indicating freedom from stress corrosion cracking under these conditions.

Laboratory Assistance Available

Bridgeport's Corrosion Laboratory will welcome an opportunity to help you with any condenser or heat exchanger tube problem.



ralty metal. Mag. 500X.

UNIFORM PELLETS WITH MANY TYPES OF MATERIALS

1/2 Million
Pelleta
Felleta
Seconda!

There is a wide range of sizes in Welding Engineers' line of Auxiliary Worm Extruders from laboratory model producing 125,000 pellets per minute to the largest model capable of extruding 1,500,000 pellets of 3/4" diameter every minute.

specially designed to process materials where uniform lengths are required. These worms assure very close accuracy in the rate of flow through every hole in the die. Usually sizes down to ½8" diameter can be handled with ease; in some cases pellets can be made to 1/16" diameter. Fuller's Earth and Bentonite Clay are two examples of materials which can be extruded with close accuracy in pellet lengths—to a tolerance of 10%. Get the Welding Engineer's story if you are interested in:

Welding Engineer's patented worms are

CLAYS CATALYSTS FILTER CAKES
DRUGS DIATOMACEOUS EARTH METAL ORES
EAULKING COMPOUNDS RUBBER ACCELERATORS
CARBON BLACK MIXES POLYISOBUTYLENE

For efficiency, for low-cost production, for improved quality . . . it's time to be acquainted with

WELDING ENGINEERS AUXILIARY WORM EXTRUDERS



When inquiring check CP 1460 on handy form, pgs. 2-3

CONSTRUCTION

Size range of 16 to 48" offered in fans . . .

have capacity to 37,500 cfm *Uses*: For factories, mills, mines, and duct installations.

Features: Sizes available are from 16" to 48" and 2900 to 37,500 cfm.

Description: Power line direct drive duct fan is built into a well constructed steel drum with rear and front mounted flanges. Motor is ball bearing, totally enclosed.



Motor is totally enclosed

Blades are non-overloading, made of cast aluminum. Fan is recommended for temperatures up to 110°F. It is available for higher temperature on special order.

Fans are built according to U.S. Dept. of Commerce, Commercial Standard CS 178-51. All ratings have been certified by Propeller Fan Manufacturers Association.

(Product of Chelsea Fan and Blower Co., Inc., Dept. CP, 639 South Ave., Plainfield, N. J. . . . or for more information check CP 1461 on handy Reader Service slip, between pages 2 and 3.)

Power linkage facilitated by additions to line of drives

Additions to manufacturer's line of friction and hydraulic drives offer a wider range of uses and are reported to meet the latest power linkage requirements.

Among these additions are a Two-Stage Hydraulic Torque Converter and a Two-Speed Transmission. The latter is designed to extend full-range performance of three-stage torque converters. Recently available units also include an Air-Actuated Friction Clutch and a Disconnecting Hydraulic Take-Off.

AFLAST! 400 SERIES LANGE OF LANGE AND A New Corrosion-Resistant Protective Coating applies, smells and looks like ordinary paint!

LANKOTE 400 SERIES synthetic resin coatings protect against acids, alkalis, acohol, salts, moisture, fungus growth, weathering. Use on metal, wood, masonry, plaster and other porous surfaces for all-around maintenance, indoors or out. Easily brushed (with no drag, no brush marks), sprayed, dipped or roller-coated without special thinners, and with no objectionable solvent odors. Works well even over most old paints!

All Lankote coating:
"tailored" to your needs, even if ose gallon is all you require! Draw on our 4,000 formulas developed during 32 years of experience. For solutions is special problems, write for "Coresion Questionnaire"

LANKOTE DIVISION

J. Landau Co., 221 Wooster Street, New York 12, N. Y. leader in protective coatings since 1920

When inquiring check CP 1462 on handy form, pgs. 2-3



When inquiring check CP 1463 on handy form pgs. 2-3

When in

For SAFER Storage of CORROSIVE LIQUORS



Investigate Our Complete Fabrication and **Lining Facilities**

- One Source of Supply
- One Responsibility
- One Order

RUBBER · PLASTICS LEAD · PHENOLICS

> Representatives in **All Principal Cities**

OTHER HEIL PRODUCTS INCLUDE: Impervious Graphite Heating and Cooling Units • Lined Storage and Process Tanks • Acid-Proof Main-Natorials • Structural Plastics • Steam Jet Agitators



When inquiring check CP 1464 on handy form, pgs. 2-3

MAY, 1953

CONSTRUCTION

Power linkage present in latter unit permits full use of peak engine torque, dampening starting, running, and stopping shocks. It also functions as a master clutch through its disconnecting or "dumping"

(Products of Twin Disc Clutch Co., Dept. CP, Racine, Wis. . . . or for more information check CP 1465 on handy form, pages 2 & 3.)

Scarce stainless steel is saved in making pressure vessels

Use of a dimpling technique by company is said to save half the critical stainless steel formerly needed in manufacture of high pressure processing vessels for chemical and food industries.

Hard-to-get metal is saved by punching cup-shaped indentations, called dimples, into sheet stainless steel. Then bottoms are punched out, jacket sheet placed around processing vessel, and welds made around each hole. Resultant jacket is said to withstand pressures up to 450 psi generated by such heating or cooling mediums as steam or brine, freon or ammonia.

(Dimpling technique is used by The Pfaudler Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y. . . or for more information check CP 1466 on handy form, pages 2 and 3.)

Reviews V-belt uses

Fractional horsepower V-belt catalog is for use in servicing light duty applications. In catalog, belts are listed according to new industry-standard numbering system. Various type machines are listed together alphabetically by company or trade names for convenience in determining proper belt.

R/M V-belt catalog is issued by Raybestos-Manhattan, Inc., Manhattan Rubber Div., Dept. CP, Passaic, N. J. When inquiring specify CP 1467 on handy form, pages 2 and 3.

> Don't Miss Processing & Engineering Data starting on page 206

New Data Available on ...

Pickling Acid Inhibitors 2

1 The standard reference work on pickling, "Efficient Pickling With RODINE" - Bulletin Number 13 - is now available in a new, revised edition.

2 This new 4-page general descriptive folder presents essential information on "Rodine" pickling acid inhibitors.

3 The recently revised "RODINE SELECTION CHART" gives characteristics of and uses for typical "Rodines" used with sulfuric and muriatic acids. Technical Service Data Sheet No. 13-1-1-4.

Use coupon below for free copies of the literature described above.

AMERICAN CHEMICAL PAINT COMPANY

General Offices: Ambler, Penna.

CHEMICALS

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CLIP AND MAIL TODAY!

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American Chemical Paint Co.

Ambler, Pennsylvania

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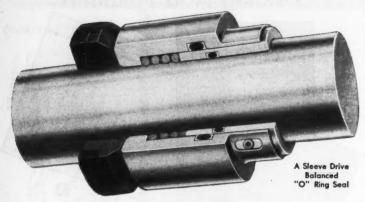
- ☐ "Efficient Pickling With RODINE" Bulletin No. 13.
- 4-page general descriptive folder. "RODINE SELECTION CHART"

City State

When inquiring check CP 1468 on handy form, pgs. 2-3

Garlock O-Ring Seals

FOR ROTATING PUMP SHAFTS



Simple in Design, Leakless in Operation

GARLOCK "O" Ring Mechanical Seals are made with a minimum of parts. This simplicity of design affords easy manufacturing adaptability of a Garlock "O" Ring Seal to withstand any liquid. whether mild, harmfully corrosive or extremely hazardous, on rotating pump shafts. The Garlock "O" Ring Balanced Seal will hold pressures up to and over 1000 p.s.i.

The "O" rings are available in "Teflon," Buna-N, Neoprene or Silicone. The metal parts contacting the liquid are available in any

On centrifugal pumps handling chemicals, petroleum products, edible liquids, pulp liquors, and many other liquids Garlock "O" Ring Mechanical Seals are giving outstanding service.

For positive sealing, easy installation and trouble-free service use Garlock "O" Ring Mechanical Seals on your rotating pump shafts. Write us about your sealing problems or contact your Garlock representative.

THE GARLOCK PACKING COMPANY PALMYRA, NEW YORK

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.



TARLOCK

PACKINGS, GASKETS, OIL SEALS MECHANICAL SEALS RUBBER EXPANSION JOINTS

When inquiring check CP 1469 on handy form, pgs. 2-3

CONSTRUCTION

Weight and space saved in plastic case for flow-meters . . .

> affords protection to set of five glass units

Plastic case made to hold a set of five glass flow-meters weighs 1 lb 5 oz, exactly one-third that of a similar wooden case. It measures 13 x 53/8 x 13/4", or about half the volume of the



The light-weight flow-meter case is made of plastic that is strong and long-wearing

wood case. Since plastic case is smaller, it can easily be carried in the hand whereas the wooden case needed a handle.

Protection is provided to the glassware by a liner, formed from the same plastic as the case, into a graduated series of grooves which snugly accommodate each size of flow-meter. Case also has a pocket for meter balls.

Material from which the case is fabricated is a plastic-synthetic rubber copolymer which is strong and long-wearing.

(Plastic case is designed to hold set of flow-meters made by Fisher & Porter. It is molded by Bassons Industries Corp., Dept. CP, 1432 W. Farms Road, New York 60, N. Y. . . . or reader may secure more information by checking CP 1470 on convenient Reader Service slip between pages 2 and 3.)

Brochure on buildings

Twenty-page brochure illustrates and details advantages of standardized steel-frame structures for industry. "Standardized Buildings by Luria" is issued on letterhead request to Luria Engineering Co., Dept. CP, 500 Fifth Ave., New York 36, N. Y.

Now-83% guaranteed minimum efficiency with No. 6 oil ANOTHER owermas

 Compare ASME tests on Powermaster with those of any other boiler. You'll see why the automatic Powermaster with VORIFLOW combustion is your best buy in packaged boilers. Powermaster efficiency actually increases at less than full load (which is normal field operation). Start cutting your steam costs today by getting full information on the installation, operating, and maintenance economics of Powermaster -15 to 500 HP units for steam generation to 250 psi, and hot water to 30 psi. ASME Code construction. Approved by Underwriters' Laboratories.

Write Now to:

ORR & SEMBOWER, INC.

960 Morgantown Road, Reading, Pa.

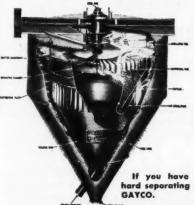
BUILDERS OF COST-SAVING BOILERS SINCE 1885

When inquiring check CP 1471 on handy form, pgs. 2-3

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan - an exclusive GAYCO feature - make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undersirable oversize.

"TIMKEN BEARING EQUIPPED" **GAYCO** brings you all these:



Range 60 to 400 mesh greater

capacity 25 to 30% greater production

Cleaner Tailings Uniform

Products Slow speed for Quick and easy adjustments

If you have an exceptionally hard separating problem, TRY THE GAYCO.

Universal Road Machinery Co.

Rubert M. Gay-Division

Factory and Laboratory, Kingston, N. Y. 117 LIBERTY STREET

Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal, Que. 8500 Decarie Blvd.,

When inquiring check CP 1472 on handy form, pgs. 2-3

Oil an by flo compo

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(Dasco Inc., I handy

Oil and grease absorbed by floor cleaning compound

Uses: As a floor sweeping and cleaning compound.

Features: Compound absorbs more than 8 times its own weight, making it suitable for absorbing

oil, greases, battery acids, gasoline, or any liquid.

Description:

Finely ground cellulose fiber material absorbs immediately, and when swept up leaves floor clean and dry. It is soft and non-corrosive, thus will not harm wood, concrete, terrazzo, or painted floors. It does not combine with oil or grease to form a compound and it is not necessary to use scrapers to remove it. Compound is said to be economical to buy, thrifty to use, and fast acting-keeping floors safe and clean.

(Product of Dept. 57, Cottontex Mfg. Co., Dept. CP. 405 E. Wells St., Milwaukee, Wisconsin

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Compound absorbs 8 times its own weight

... or for more information check CP 1473 on handy Reader Service slip between pages two and three.)

Silicone-base waterproofing material contains no solvents

Uses: For sealing all masonry surfaces against further water penetration.

Features: Transparent, silicone-base waterproofing coating contains no solvents, chlorinated rubber phosphates, or butyl menthacralate. Being solvent-free, material eliminates the usual high flash point which in the past has created a fire hazard to men smoking during application period.

Description: Coating may be applied while walls are damp, according to manufacturer. Walls are not left with a gloss or sheen appearance of any kind. Material is said to easily penetrate and seal all masonry surfaces against further water penetration.

(Dascone is a product of The Dasco Chemical Co., Inc., Dept. CP, 1602-04 Thames St., Baltimore 31, Md. . . . or for more information check CP 1474 on handy form, pages 2 and 3.)



Making water work harder

Water alone won't work—it takes soap to get Butch really clean!

As recently as a century ago, families made their own soap by boiling kitchen fats with lye they extracted from wood ashes. But since 1837 chemical discoveries as to the nature of fats, glycerin, and alkali have transformed soap-making from a household handicraft into a giant process industry. Today this industry is making water work harder than ever with new synthetic detergents of greater wetting and emulsifying power—even in hard water or acid solutions where soaps won't work.

As a matter of fact, 40% of the cleaning agents now in use are synthetic detergents. Over half of them are alkyl aryl sulfonates, known in practically every home in America by short trade names such as Fab*. They are made from a combination of sulphuric acid and benzene-like oils which is then neutralized to form the non-corrosive sulfonate. ALOYCO valves made of

Aloyco 20 and Inconel are widely used by the three leading firms in the soap field, as well as by other processors of synthetic detergents to withstand the corrosiveness of the basic ingredients.

These harder working "soaps" represent only a small percentage of the many new end-products of modern chemistry that flow through ALOYCO corrosion-resistant valves during their processing. ALOYCO—in its engineering, its research and testing facilities, and in its manufacturing operations—has kept pace with the technical growth of the industries it serves. ALOYCO valves go hand-in-hand with chemical progress.

If your business involves chemical processing, the Aloyco Corrosion Engineering Service will be glad to assist you in selecting the proper valve and design for every corrosive service. Write to ALOYCO about your own valve needs.

*Registered Trade Mark of Colgate-Palmolive-Peet Company



ALLOY STEEL PRODUCTS CO., INC.

1302 West Elizabeth Avenue, Linden, N. J.

Plants: Linden, N. J.; Bloomfield, N. J.; Elizabeth, N. J.

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When inquiring check CP 1475 on handy form, pgs. 2-3



27 of the 28 Dryers used by WEST END CHEMICAL COMPANY are STANDAR D-HERSEY

To tap the fabulous sub-strata chemical resources of Searles Lake in California's Mojave Desert, it was necessary for the West End Chemical Company in 1926 to bring in special custom-made machinery and set up a plant at the source of the raw product. The machinery had to be rugged and dependable because repairs and replacement facilities were many long desert miles away.

Vital to the West End process of manufacturing borates and soda products is the use of rotary dryers. Their first dryer in 1926 was a STANDARD-HERSEY. With modifications, that dryer is still in use today. Since then, West End has purchased 26 additional STANDARD-HERSEY rotary dryers.

This case history is convincing proof of the dependability of STANDARD-HERSEY Dryers. Now celebrating its 50th year, Standard Steel Corporation manufactures more than 30 separate types of dryers for process industries throughout the world. Special equipment can be engineered to fill special drying requirements.

> Standard-Hersey "pilot" drying facilities, utilizing our test plants, are available to both customers and prospective customers. WRITE TODAY FOR COMPLETE DRYER BULLETIN NO. 524.





5083 Boyle Ave., Los Angeles 58 • 7 East 42nd St. New York 83

When inquiring check CP 1476 on handy form, pgs. 2-3

CONSTRUCTION

Tiny parts are safe in cabinet drawer

Uses: For storage of small parts. Features: Tiny parts cannot slip out, become damaged, or jam drawer, according to the manufacturer's report.

"Little Gem" steel Description: storage cabinet is designed for use either individually, in stacks, under counters, or on shelving. Drawer of cabinet measures only 11 x 11 x 11/4". It accommodates up to 28 adjustable compartments enclosed



Design prevents shuffling of parts when drawer is jerked or slammed

on all four sides and bottom. Front of compartments is curved for easy withdrawal of parts. Overhang at rear prevents shuffling of items when drawer is jerked open or slammed shut. Label holder identifies each compartment.

(Product of Aurora Equipment Co., Equipto Div., Dept. CP, 422 Cleveland Ave., Aurora, Ill. . or for more information check CP 1477 on handy Reader Service slip, pages 2 & 3.)

Pictures applications of flexible metal hose

Six-page, 2-color bulletin describes and illustrates various applications of flexible metal hose. A chart is included which shows type of metal hose assembly to use for handling different kinds of liquids, gases, solids, and semi-solids. Hose is available in standard assemblies and in special purpose types. Specifications and sizes are given.

Bul CMH-122R is issued by Flexonics Corp., Dept. CP, 1319 S. Third Ave., Maywood, Ill. When inquiring specify CP 1478 on handy Reader Service slip, pages 2 and 3.

Strange Perhaps...But They <u>Are</u> Related!

Masland Duran . . . "Folded-und-Formed" Heating Elements. What's the connection? Well, in the manufacture of Duran, the popular all-plastic material for fine upholstering, the process includes heating and curing in ovens equipped with Trent Patented

"FOLDED-and-FORMED" Heating Elements

with the he hese quality n c y, du



"Folded-and-Formed" Elements are made in Standard and Custombuilt Racks to meet any installation or K. W. re-quirement. What is your heet-

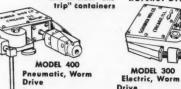


When inquiring check CP 1479 on handy form, pgs. 2-3





Hand Operated, Double



Shipping and F.O.B. Point, Chicago.

Write for bulletin.

and all other "one

Mfrs. "Schinker De-Kinker" Chime Straightener — Schinker Life-Time "Spark-Proof" Drum Plug Wrenches.

MICHAEL A. SCHINKER MFG. CO.
6514 S. Western Avenue, Chicago 36, Illinois

When inquiring check CP 1480 on handy form, pgs. 2-3

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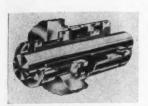
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Pressures up to 1000 psi withstood by balanced mechanical seal . . .

it is not necessary to lift upper half of unit for installation or removal

Pressures up to 1000 psi can be resisted by heavy duty mechanical seal being offered by manufacturer. It is designed for applications where ruggedness to withstand high pressures is an important factor.

A packaged unit, seal is factory inspected and furnished pre-assembled on a sleeve for ready installation. When used with



Sectional view of balanced mechanical seal

split case pumps, it is not necessary to lift upper half of casing to install or remove the seal. Compact design adapts it for use in conventional pump stuffing boxes.

Incorporating a rotating sealing washer

and a "floating" stationary seat, balance is accomplished by lowering the washer face to a point where stuffing box pressure is not exerted against the sealing area. To insure peak efficiency, mating faces of the washer and seat are precision lapped. Rotating assembly consists of a retainer positively driven by the sleeve, with the washer driven from dents in the retainer. Assembly is held in contact with lapped face of seat by means of multiple springs equally spaced around the sleeve at the back of retainer.

O-rings provide sealing between sleeve and shaft and also between washer and sleeve. This affords sufficient flexibility in rotating assembly to compensate for axial and radial shaft movement and for normal wear of sealing faces. Another O-ring is used between stationary seat and end plate as a cushioning to prevent stresses on the highly lapped seat face.

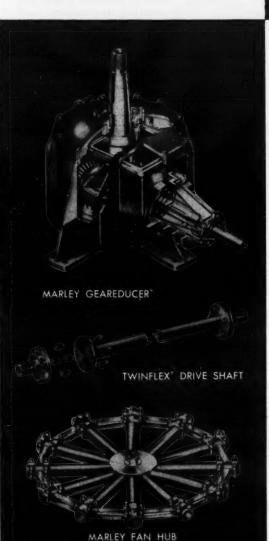
(Type 8-B Shaft Seal is product of Dept. C-14, Crane Packing Co., Dept. CP, 1800 W. Cuyler Ave., Chicago 13, Ill. . . . or for more information check CP 1481 on handy Reader Service slip between pages 2 and 3.)

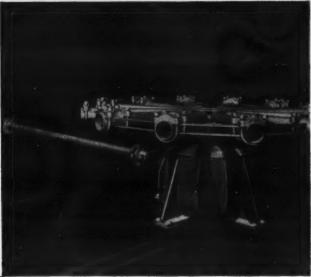
Microfilm enlargement service permits record restoration

Continuous microfilm enlargement service offers a convenient means to restore, on paper, any or all of a microfilm file. Anything from checks to legal-size documents on either 16mm or 35mm microfilm can be restored to paper. Maximum image width is 14". Processing equipment automatically develops, rinses, fixes, and dries enlargements in one continuous operation.

Microfilm enlargement service is described in Bul BDS-3 Rev 1 issued by Remington Rand Inc., Dept. CP, 315 Fourth Ave., New York 10, N. Y. When inquiring specify CP 1482 on handy form, pages 2 and 3.

MARLEY Mechanical Equipment is POWERED for PERFORMANCE





Driving the large fans of modern cooling towers is a rugged job... one that demands power transmission equipment designed with an extra measure of sturdiness. With its added strength it must also be precision built for long, smooth service. That's why Marley designs and manufactures every element of the mechanical equipment for Marley cooling towers. The result is specialized equipment for a specific service.

MARLEY GEAREDUCER*

An exclusive Marley design utilizing hardened alloy steel gears, tapered roller bearings and heavy, carefully machined shafts—all in an extra strong, well sealed, cast iron case. Lubrication to every point is constant and flow is maintained whether operation is forward or reverse.

MARLEY TWINFLEX* DRIVE SHAFT

This accurately balanced assembly is constructed of heavy steel tubing zinc-coated and sealed against internal corrosion by welded flanges. It transmits power to the cast steel yoke through pre-moulded neoprene inserts bonded to cadmium plated steel cores. They have excess load capacity that easily absorbs starting shock and transmits power smoothly.

MARLEY FAN HUB

This hub for largest fans is of all-steel construction. Hub spokes are seamless steel tube; center hub and clamps are steel castings. It is precision welded throughout for great strength. After fabrication, the hub is hot dip galvanized. The design provides quick adjustment for fan pitch and uses a retention pin for added safety.

Any Cooling Tower May Be Modernized with Marley Mechanical Equipment

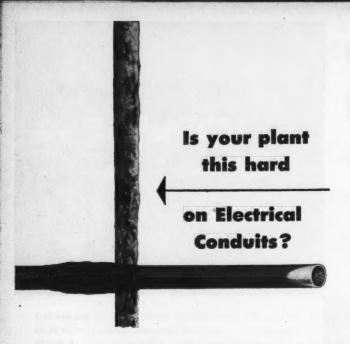
The Marley Company



Kansas City, Missouri

When inquiring check CP 1483 on handy form, pgs. 2-3

ING



Atmosphere in a meat packing plant chewed up the electrical raceway you see above. It was replaced with ELECTRUNITE "Dekoron-Coated" E.M.T. Here's why:

1. ELECTRUNITE "Dekoron-Coated" E. M.T. is a threadless, rigid steel raceway with a polyethylene coating that resists most highly corrosive fumes and chemicals.

2. Installation is easy. "Dekoron-Coated" E.M.T. can be cut to length, bent to fit. Tight connections are made with approved fittings, eliminating threading. Joints are protected by polyethylene or vinyl-backed electrical tape. It's corrosion-resistant from end to end.

3. ELECTRUNITE "Dekoron-Coated" E. M. T. stays on the job longer . . . in tough locations. Maintenance costs go down. Periodic replacements are infrequent.

Corrosive materials which can't affect "Dekoron-Coated" E.M.T. are listed in Booklet DEK-1, along with instructions for installing it. Write for it.

STEEL AND TUBES DIVISION REPUBLIC STEEL CORPORATION

205 East 131st Street Cleveland 8, Ohio



When inquiring check CP 1484 on handy form, pgs. 2-3

CONSTRUCTION

Air pressure automatically shut off when air hose connection is broken

Two-way coupling is said Uses: to assure positive shut-off of air pressure when disconnecting air hose connections.

Features: Couplings have valves which automatically shut off air pressure and eliminate need to open and close air valves at compressor tank. This enables air tools to be changed quickly and easily right at the job.

Description: Manufacturer reports increased safety in handling tools. Accidents caused by high pressure air remaining in hose after disconnecting are eliminated. Since both hose couplings are sealed, foreign particles are prevented from entering and traveling into air tools, thus equipment life is prolonged.

Couplings are constructed with identical type valves in each end. These are spring seated to prevent passage of air when disconnected. Pressurized air bears against the valve ends, sealing them positively. When couplings are connected,





Couplings shown connected and disconnected

valves butt against one another and depress. This opens the seats and permits a free flow of air through the coupling. Underwater tests at 125 psi reportedly show no leakage in either half of the coupling, or in the assembly. Units are precision machined to connect and disconnect easily.

Brass valves and seats are employed, and coupling bodies are made of 356-T6 aluminum. Anodizing the aluminum, it is claimed, enables it to withstand salt spray tests for 1000 hours.

(Product of Twinmatic Corp., Dept. CP, 2246 S. Barrington Ave., Los Angeles 64, Calif. . . . check CP 1485 on handy form, pages 2 and 3.)

G-E CALROD HEATERS GIVE DEPENDABLE SURFACE HEATING

When you need dependable heating for platens, cylinders, dies, rolls-or any surface heating application—use an easy-to-install G-E heater. Use Calrod heaters for clamping on, wrapping around or spac- For a "spot" of heat, insert ing away from surfaces, locating in grooves, or drilled holes and casting into metal. They come in the widest range of standard sizes, ratings and sheath materials to meet almost any conceivable heating requirement.



cartridge heaters into holes,



For a "zone" of heat, clamp on strip or tubular heaters, or



cast dependable Calro'd heaters permanently into metals.

G-E Distributor or write: Sect. 720-76, General Electric Co., Schenectady, N. Y. * Registered Trademark, G.E. Co.

Get complete catalog of heaters

and devices, GEC-1005, and

"Heating Surfaces," GEA-5097, from your nearby Authorized

FOR FREE BULLETINS

GENERAL (SA)

When inquiring check CP 1486 on handy form, pgs. 2-3



When inquiring check CP 1487 on handy form, pgs. 2-3

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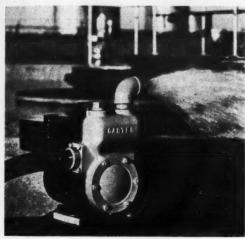
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unobstructed volute passages providing high rate also minimize wear

Uses: Although unit is particularly well adapted for handling solids, muck, and sludge, it is also suitable for general pumping operations.

Features: Exclusion of all components except impeller and seal from volute case of self-priming centrifugal pump enables it to have a higher than normal capacity in relation to its size. Although the



High capacity and powerful discharge stream of centrifugal pump are demonstrated by this 1½" unit handling raw sewage in field test

standard AGC rating for 1½" centrifugal pumps is 3000 gph, manufacturer's unit in this size is rated at 5500 gph. This design also reduces wear and allows quick priming.

Description: This light and compact pump is built for continuous service under difficult pumping conditions, according to manufacturer. Twin Coaxial volute passages are abrasive resistant. Impeller is of the open type. Shaft seal and suction check valve are made of positive sealing Neoprene.

Principle of adjustment compensates for impeller wear without disassembling or replacing a single interior part. No shims, wear plates, or replacement parts of any kind are required. Adjustment can be accomplished in a matter of minutes. Pump is reported to retain its maximum capacity and fast priming ability throughout its life.

Pump is available in a complete range of sizes—1½" (5500 gph) to 10" (250,000 gph). It can be obtained with gasoline or diesel engines, electric or belt drives. Various mountings include skids, steel wheels, pneumatic tires, or trailer type. Skid mounting may be converted to wheels without removing the base. Both types of wheels are interchangeable.

(Humdinger Self-Priming Centrifugal Pumps are product of Ralph B. Carter Co., Dept. CP, Hackensack, N. J. . . . check CP 1488, pgs. 2 & 3.)



When inquiring check CP 1489 on handy form, pgs. 2-3



Good resistance to hot mineral acids, weak alkalies, common solvents, oils, greases, neutral salts, acid salts and chlorine.

No loss of strength after 32 days exposure to air at 257°F. Negligible shrinkage.

Excellent resistance to strong acids such as sulphuric, nitric, hydrochloric, hydrofluoric and aqua regia. Also to sodium and potassium hydroxide; chlorine and bromine water, silver nitrate, tannic acid and many oils, fats and waxes.

Boiling solutions are readily withstood by these versatile media.

SARAN

Exceptional resistance to acids, particularly hydrochloric, and to alkalies except ammonium hydroxide. Unaffected by alcohols or aliphatic hydrocarbons. Continuous exposure up to 160°F. and intermittent exposure up to 212°F. do not appreciably affect tensile strength.

*T.M.—E. I. duPont de Nemours Co. **T.M.—Union Carbide & Chemical Co.

GLASS

Woven from highly resistant, durable chemical glass. Usable where such synthetic itself is usable.

These cloths are available in several weaves and in standard widths ranging made up into filter element woven in our own mill by perience in the art of syn-these cloths are all their fabric weaving.



Weavers of Industrial Filter Media for over Forly Years

The National Filter Media Corp.

General Offices & Mills: New Haven 14, Conn. Western Office & Factory: Salt Lake City 1, Utah

Chicago, III. 2627 West 19th St Roselawn Conter Bldg

Houston, Texas 1486 Second National Bank Bldg. Oslo, Norway Nicolai Friis Johannesburg, South Africa Edward L. Bateman

When inquiring check CP 1490 on handy form, pgs. 2-3

CONSTRUCTION

Trigger-action spray gun built for heavy duty

Uses: Suitable for all types of work including painting, refinishing, touch-up work, cover-up coats, rustproofing, stenciling, and general marking.

Features: Gun delivers over 90 lb of pressure at 7200 strokes per minute. No compressor is needed — just plug into AC outlet and use.

Description: Trigger-action, light-weight spray gun is self contained and has a sturdy vibrator motor in handle. Entire unit is



Operates without compressor

fully UL approved, including 8foot neoprene cord and plug set. Also included is 25-ounce polished aluminum container and five extra nozzle discs.

(Product of Waldorf Sales Co., Dept. CP, 363 Central Park Ave., Yonkers, N. Y. . . . or for more information check CP 1491 on handy Reader Service slip, pages 2 and 3.)

Supply, demand balanced by steam accumulator

Eight-page, illustrated catalog tells how accumulators store steam to meet peak process demand. Specifications, principles, and practical applications are included. How to calculate required capacity for needs is also discussed.

Bul RA-52-8 is issued by Foster Wheeler Corp., Dept. CP, 165 Broadway, New York 6, N. Y. When inquiring specify CP 1492 on handy Reader Service slip, pages 2 and 3.

Sicon

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HEAT-RESISTANT FINISH

*A PRODUCT OF THE SILICONES



PROTECTS
this Heater
at
Temperatures
of
875°F.

Sicon Aluminum protects the combustion chambers of John Zink Heaters against extreme high heats of 875°F, without powdering or losing its gloss.

Sicon, in attractive COLORS, also preserves the OUTSIDE appearance of their products, adding greatly to sales appeal, and prolonging life.

For inside and outside application this amazing silicone base finish provides sure protection plus sales appeal. WRITE FOR DETAILS . . . TODAY!

Manufactured exclusively by

MIDLAND Industrial Finishes

When inquiring check CP 1493 on handy form, pgs. 2-3

"Easy to install... Easy to operate... Easy on the fuel!"





 A complete unit, piped and wired, ready for service connections.

- Needs no special foundation or expensive stack.
- Fully automatic... attention-free.
- 80% efficiency means real fuel savings.
- Easy to clean and service...
 all parts accessible.

20 SIZES - 10 to 600 h.p. -15 to 200# OIL OR GAS

FREE BULLETIN! WRITE FOR YOUR COPY

Complete engineering facts on the exact AMESTEAM GENERATOR to do your job and save you money. Write today!



AMES IRON WORKS

BOX B-53 OSWEGO, N. Y.

When inquiring check CP 1494 on handy form, pgs. 2-3

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Heating of hollow holding bolts on heavy steam equipment makes joints leak-proof

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Greater bolt stressing is possible in large hollow holding bolt through use of a bolt heater. Just as structural steel beams are fastened together securely by contraction of hot rivets as they cool, heated holding bolts on heavy steam equipment can be turned up tighter. As the bolts cool, flanges are drawn together to produce leak-proof joints.

Heater can be supplied in ratings ranging from 1000 to 6200 watts all at 120 volts. Various sizes of heater elements permit installation in bolts one to three feet long and hole diameters from one-half to one inch. With proper selection of power rating and size, heater life will average approximately 500 hours.

Although they are of particular interest to both fabricators and users of heavy steam equipment, these same heaters can also be used for heating die blocks and large metal platens. Holes in the bolts or studs to accommodate the heater can be drilled either while fabricating or during a shutdown after installation. Complete heater unit includes handle, plugs, cord, and conduit box. Separate heater elements are also available.

(Corox bolt heater is product of Westinghouse Electric Corp., Dept. CP, 401 Liberty Ave., Box 2278, Pittsburgh 30, Pa. . . . or for more information check CP 1495 on handy form, pages 2 and 3.)

Minimum maintenance required for midget pump

Uses: For handling liquids where capacity requirements range from 0 to 6 gpm from free flow to 6 feet of head. It is readily adaptable to many applications such as liquid circulation in agitation tanks, laboratory work, and others.

Features: Pump is direct-connected to motor and requires minimum maintenance. It is designed for continuous or intermittent operation.

Description: Midget centrifugal pump is approximately 5" in diameter and 9" in length. It weighs about 5 lb. Mounting base is provided on the motor



Side and end view of midget pump

housing. Inlet pipe is 7/8" OD and outlet pipe 5/8" OD. Pumps are factory tested within 5% of rating before shipment.

(Model MU midget centrifugal pump is product of Pioneer Pump Div., Detroit Harvester Co., Dept. CP, 19657 John R. St., Detroit 3, Mich. . . . or for more information check CP 1496, pgs. 2 & 3.)



When inquiring check CP 1497 on handy form, pgs. 2-3

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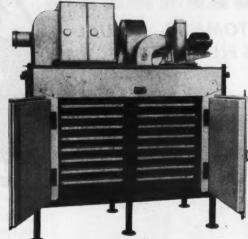
Dry Your Process Materials More Uniformly—Faster

GEHNRICH

Recirculating OVENS

Gas • Steam Electric • Oil

Batch or Conveyor Types



Steam Heated Tray Oven

W. S. ROCKWELL COMPANY

2203 Eliot Street

tellistic C.

When inquiring check CP 1498 on handy form, pgs. 2-3

FOR BLENDING LIQUIDS You can't beat the accuracy of a...



AUTOMATIC BLENDER!

*THE BLENDER THAT USES XACTO—the world's most widely used meters!

Actual operating records prove that use of the Bowser Automatic Blender results in constant formula accuracy to 1/10 of 1%.

If you blend or mix two or more liquids, chances are the Bowser engineer in your vicinity can show you how to increase production, cut costs and assure product uniformity. Call him TODAY!

Write for the new folder on Automatic Blending Systems

BOWSER

BOWSER, INC., 1315 CREIGHTON AVE., FORT WAYNE 2, IND.

REGIONAL OFFICES: ATLANTA . CLEVELAND . DALLAS FORT WAYNE . KANSAS CITY . NEW YORK . SAN FRANCISCO . WASHINGTON, D. C. . HAMILTON, ONTARIO

When inquiring check CP 1499 on handy form, pgs. 2-3

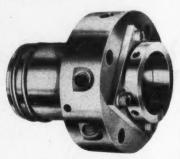
CONSTRUCTION

Installation of seals in stuffing box is simplified

Uses: For sealing stuffing boxes of centrifugal pumps.

Features: No measurements are necessary to properly position seal on pump shaft, simplifying installation of unit.

Description: Stuffing box seals, designated Model SB, are completely pre-assembled, "packaged" units,



No measurements necessary to properly position seal

ready for installation. Seal faces are fully protected against damage or contamination in storage, or while being handled.

Each design is engineered for particular job requirements with emphasis on ruggedness and durability. Special hard facings are available for maximum wear resistance at point of sealing. Full records of SB seals are kept in manufacturer's engineering files to facilitate duplication. Seals carry serial numbers.

(Model SB seals are a product of Sealol Corp., Dept. CP, 45 Willard Ave., Providence 5, R. I. . . . or for more information check CP 1500 on handy form, pages 2 & 3.)

Precision machine work results with centering device . . .

sturdily built unit will handle small parts

Precision machine work can be accomplished on small machine parts with sturdily built Indexing Centers. Device can handle stock up to 5" in diameter and 6" in length.

Unit is said to be ideal for dividing operations such as machining



These large capacity storage tanks keep your production from going hungry... assure ample stocks of raw materials for steady output. With MARIETTA concrete stave silos, you can easily increase reserves from days to weeks, cut handling costs and fully protect stored materials from fire, air, and moisture. Tanks are available in many sizes, many arrangements and can be equipped for materials handling equipment.

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Write for full information.

The MARIETTA Concrete Corporation Marietta, Ohio • Branch Offices:

501 Fifth Ave., New York 17, N. Y. Pulaski Hwy. at Race Rd., Baltimore 21, Md. 805 Bessemer Bldg., Pittsburgh 22, Pa.

When inquiring check CP 1501 on handy form, pgs. 2-3

Viscous Adhesive PUMPED 7 YEARS Without Repairs to VIKING PUMPS



Installed in 1945, in the industrial adhesive manufacturing plant of F. G. Findley Company, Milwaukee, these two Viking Pumps have given maximum service with minimum attention and without repair costs. They have handled thousands of barrels of adhesives with viscosities from 100 cps to 3000 cps, with temperatures from 70 to 165 degrees F.



If you have the problem of moving heavy, viscous liquids — or any other liquids — Viking experience is available to help you. Write for bulletin 53SCC.

Viking Pump Company Codar Falls, lower

When inquiring check CP 1502 on handy form, pgs. 2-3

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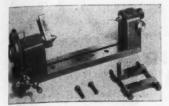
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CONSTRUCTION

splines, flutes, and gears. It can also be used for milling, shaping, and grinding squares, hexagons, or odd angles. Accurate cross-drilling can be held to close tolerances.



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A ball crank and worm gear, equipped with graduated collar, turn the head center. Each graduation indicates a center movement of three minutes. A complete turn of the ball crank revolves the center five degrees. Easily read dial on worm wheel is graduated 360°.

For quick positioning of the center, worm gear can be disengaged and a clamping device will lock the head center in any desired position. An added feature is the plunger type tail center with automatic spring tension. This permits removal of the work without disturbing the head center. Knurled thumbscrew securely locks the tail center while work is in progress.

(Product of South Bend Lathe Works, Dept. CP, 425 E. Madison St., South Bend 22, Ind. . . . or for more information check CP 1503 on handy form, pages 2 and 3.)

No greasing needed for bearings of motors

Six-page brochure gives speedtorque curves, frame number charts, dimensions, and specifications for line of electric motors from 1/3 to 150 hp. Bulletin also covers motor design, including use of prelubricated sealed ball bearings throughout, which require no greasing or cleaning for normal life.

Bul RS-2 is issued by Dept. 202, Lima Electric Motor Co., Dept. CP, Lima, Ohio. When inquiring specify CP 1504 on handy form, pages 2 and 3.

For more information on product at right, specify CP 1505
. . . see information request blank between pages 2 - 3.



n-BUTYL CHLORIDE 2-ETHYLHEXYL CHLORIDE

are convenient. economical alkylating agents

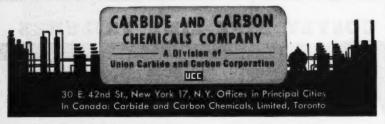
FOR USE IN THE SYNTHESIS OF:

n-Butyl Chloride and 2-Ethylhexyl Chloride are water-white liquids with mild odors. They are solvents for oils, fats, and waxes. n-Butyl Chloride is a valuable vermifuge in veterinary medicine.

essential oils pharmaceuticals dyestuffs oil additives rubber chemicals plasticizers insect repellents stabilizers for synthetic resins

READILY AVAILABLE in commercial quantities

For samples, prices, and information, call the CARBIDE office near you.



When inquiring check CP 1506 on handy form, pgs. 2-3



Before you order, compare the purity of El Dorado fatty acids with all others.

You'll agree - El Dorado's standards are the highest in the industry.

One BIG REASON is that El Dorado has specialized in Coconut Oil Products for a half century.

Delivery? El Dorado maintains stocks in New York, Chicago, San Francisco areas...ready to go when you want service.

For samples and specifications, write Dept. P.

GUARANTEED **PRODUCTS** PURITY Caprylic Capric 94% Lauric 921/2%" Myristic 70-75% **Palmitic**

OIL WORKS

MAIN OFFICE:

311 California Street San Francisco, Calif. Bayonne, New Jersey

PLANTS: Oakland, Calif.

When inquiring check CP 1507 on handy form, pgs. 2-3

CONSTRUCTION

Three additional colors available in line of anti-rust paints

Manufacturer's line of anti-rust paints has been broadened by the addition of three more colors. Formerly furnished in black, clear, and aluminum, product is now also supplied in light gray, oxide red, and chrome green.

Made with a blend of vegetable oils including soya bean and processed Menhaden, plus rust-inhibiting chromates, paint is said to stop rust in one application. Manufacturer states that the paint can be applied over rusty surfaces without wire brushing, scraping, or sandblasting and without the use of a primer coat of any kind.

Product absorbs surface rust, penetrates to the clean metal beneath, and seals it against further rust or corrosion. It resists moisture, mild chemicals, and temperature changes. Application can be by brush, spray, roller, or dip - indoors or out.

(PCA anti-rust paints are product of Paint Corp. of America, Dept. CP, Fidelity Bldg., Cleveland 14, Ohio . . . or for more information check CP 1508 on handy Reader Service slip between pages two and

Self-contained steam boiler plants shown

Self-contained, fully automatic steam boiler plants are described and illustrated in 10-page, 2color bulletin. Super-Matic Scotch Steamboilerplants are said to have ample heating surface, large combustion space, plus plenty of water storage and steam space.

Bulletin gives specifications and typical thermal efficiency test data for boilers. Plants are available in several series, 10 sizes, with power ratings from 12 to 125 hp. Either oil or gas burning types are available. Steamboilerplant comes complete and ready for steaming as soon as electricity, steam, water, and fuel lines are connected.

Bul A-104 is issued by Eclipse Fuel Engineering Co., Dept. CP, 1001 Buchanan St., Rockford, Ill. When inquiring specify CP 1509 on handy Reader Service slip between pages 2 and 3.



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Improve workers' safety - health - comfort - efficiency. Get rid of dangerous gases, fumes, stagnant air. Coppus Design "A" Ventilator ventilates tanks, tank cars, drums, vats, underground cable manholes, pipe galleries, airplane wing compartments, fuselages. For complete information, write Coppus Engineering Corporation, 385 Park Ave., Worcester 2, Mass. Sales Offices in Thomas' Register.

Other "Blue Ribbon" Products in Chemical Engineering Catalog, Refinery Catalog, Best's Safety Directory and Mining Catalogs.

When inquiring check CP 1510 on handy form, pgs. 2-3



When inquiring check CP 1511 on handy form, pgs. 2-3

Vacuum of 10-7 mm of mercury held by tube fittings in test...

danger of other fittings twisting loose eliminated by torque free design

Uses: For industrial applications requiring high vacuum. Fittings can be used in process instrumentation or in any high vacuum system.

Features: In a special testing unit, fittings were shown to hold a vacuum of 10⁻⁷ mm of mercury or .00000000194 pounds per square inch absolute pressure. Fittings held this high vacuum when tightened only with an ordinary wrench. Design is such that no torque is placed on the tubing to which the fittings are attached. This eliminates the possibility of other fittings on the same line twisting loose.

Description: Tube fittings have a back and front ferrule, precision made to fit each other, and both of which fit into a nut. They are available in brass, aluminum, steel, stainless steel, and monel.

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pgs. 2-3

In the laboratory demonstration of vacuum held by fittings, a reducer and a cap were used. Special testing unit consisted of an oil-sealed mechanical fore pump and an oil diffusion pump. Three vacuum gages were used, the most sensitive being an ionication gage, which employs a hot filament. It works on the principle that the ionization in the tube is proportional to the molecular concentration. Reduction in air pressure decreases ionization, which in turn lowers the current measured on control panel.

(Swagelok fittings are product of Crawford Fitting Co., Dept. CP, 884 E. 140th St., Cleveland 10, Ohio . . . or for more information check CP 1512 on handy form, pages 2 and 3.)

High strength, immediate bond, improved impact resistance provided by adhesive

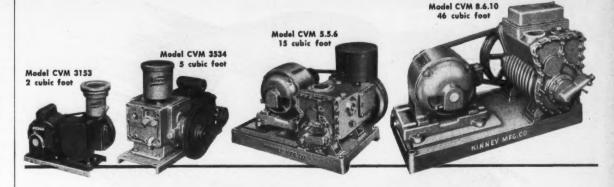
Uses: Since adhesive sticks firmly to wood, fiber, and steel, it is adaptable to a variety of uses. It has good adhesion to cold steel and is not hampered by humidity. Present principal application is in the shoe industry.

Features: Product forms a permanently flexible immediate bond, which has high strength and excellent impact resistance.

Description: Material is a hot melt plastic resin adhesive. It contains no water or solvent to evaporate, and unlike asphalt or resin pitches, and it does not crystallize.

Application is clean and fast. Preferred method is to use a machine so that the temperature may be maintained in the desired range of 265 to 280°F. Excessive heating above 300°F impairs flexibility and bond strength. Heated grid pan or hot roller type applicator can be used if heating can be controlled.

(Darex R8 hot melt adhesive is product of Darex Shoe Products Div., Dewey & Almy Chemical Co., Dept. CP, 62 Whittemore Ave., Cambridge 40, Mass. . . . or for more information check CP 1513 on handy form, pages 2 and 3.)



COMPOUND VACUUM PUMPS

ONE pump casing . . . ONE motor and drive shaft . . . TWO pumping chambers connected in series - this is the basic design of the Kinney Compound Vacuum Pump. Built in four sizes - with 2, 5, 15, and 46 cu. ft. per min. displacements - the Kinney Compound Vacuum Pump fills an important place in high vacuum systems. Because the Compound Pump pulls to 0.2 micron or better, it often handles the complete vacuum job without diffusion pumps or mercury vapor pumps. Each pump retains better than 50% of its theoretical pumping speed right into the less-than-one-micron zone . . . assures fast pump down for most efficient utilization of processing time. Each pump provides the lowmaintenance, high-efficiency operating advantages that have made Kinney Vacuum Pumps the first

choice of Industry. They are easy to service . . . no special tools are required.

Experienced vacuum engineers, here in Boston and in our branch offices, will be glad to discuss the application of vacuum in your plant. KINNEY MANUFACTURING CO.— manufacturers of vacuum and liquid pumps. Boston, New York, Chicago, Detroit, Cleveland, Atlanta, Philadelphia, Pittsburgh, Los Angeles, Charleston (W. Va.), Houston, New Orleans, San Francisco, Seattle, and foreign countries.

Each pump provides the lowefficiency operating advantages
Kinney Vacuum Pumps the first

KINNEY MANUFACTURING COMPANY
3573 Washington Street, Boston 30, Mass.

Send Bulletin V-51B describing complete of Kinney Vacuum Pumps.

Name



	etin V-51B describing complete line Vacuum Pumps.
Name	
Company	
Street	
City	State

When inquiring check CP 1514 on handy form, pgs. 2-3

SING



BETTER FILTRATION LEAVES It'S MARK

The grooves on this filter cake were made by the famous FEinc String Discharge . . . one of the big reasons why FEinc means better filtration.

The String Discharge literally lifts the cake right out of the weave of the filter cloth . . . carries it away in an unbroken sheet. There's no scraper to wear, smear, blind, or plug the cloth. Because compressed air is not needed to free the cake, there's no chance of blowing filtrate back into the cake.

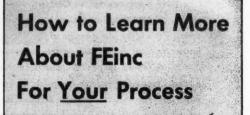
Other FEinc 'features like the' Compression Dewatering Mechanism or the Washing Mechanism give even cleaner cake, and better recovery of solubles.

One FEinc user saved enough with these special high-performance features to pay for his filter in three months. Another replaced four plate and frame presses with one FEinc, and reduced filtration costs 59%. Another eliminated an entire extra drying process by using more efficient FEinc filters. You can save too... write us today.





Our Filtration Fabrics Division is one of the leading manufacturers of long-lasting, synthetic filter fabrics. Send for free sample folder . . . today!



1 FREE TESTING SERVICE

At no expense to you, we'll test your slurry and send you a complete report on what FEinc filters can do for you. In your plant, without interrupting your process

without interrupting your process, or in our laboratory, with a 5-gallon sample of your slurry. Send it today!

PILOT PLANT



RENT this small but complete rotary filter. Has all FEInc features, plus interchangeable scraper discharge. No capital investment is required, and a generous part of the law monthly rental can be credited against the future purchase of any FEinc filter. Write today for details.



When inquiring check CP 1515 on handy form, pgs. 2-3

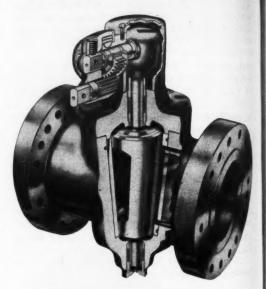
CONSTRUCTION & MAINTENANCE

No lubrication required for plug valve . . .

use of lift-turn-reseat principle permits ease of operation in pipe line

Uses: For refinery, pipe line, and general industrial service applications.

Features: Outstanding advantage of the valve is that its design eliminates the need for lubrication. Another important characteristic is the ease of operation which results from sturdy operating mechanism which allows the practical use of the lift-turn-reseat



Sectional view of gear operated plug valve

principle. Use of separate seat facilitates operation, permits field repair without removing valve from line, and allows selection of trim materials best suited for service conditions.

Description: Non-Lubricated Lift-Plug Valves are offered in sizes from 2 through 12" and in pressure ratings from 600 lb CWP to 5000 lb OWG. They are fabricated of forged alloy steel, forged carbon steel, and cast carbon steel. Units are said to combine the advantages of both plug and gate valves.

In most plug valves, lubrication is required not only to make operation easier but also to aid in effecting a seal. Problem is effectively solved in this valve by the separation of the seat from the body. Portions of the exterior surface of this seat surrounding the ports are intentionally exposed to line pressure in such a manner that the resultant forces act to press the seat more firmly against the plug. In this way a seal is obtained that becomes more secure as pressure is increased. Need for lubrication to aid the sealing action is thus eliminated.

Opening or closing the valve is accomplished by continuously rotating the operating lever in the required direction until it comes to a full stop. Spur gear reduced is attached to larger models to provide them with the same ease of operation as the smaller CORF CA

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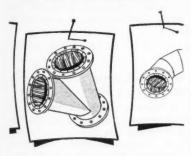
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and it's as easy as MPC!

MPC Wood-Lined Steel Pipe is the efficient and economical answer wherever corrosion, abrasion, frictional resistance or sliming is a problem.

Ideal for corrosive liquids, gases and fumes including aggressive waters, industrial waste liquors, pulps, slurries, acid, alkali and salt solutions.

For service up to 180° F. and 250 p.s.i. Higher pressure ratings for special service requirements. All pipe flanged and available in 10' and 20' standard lengths or "tailor-made" to your specifications. Easy to cut and reflange. All flanges have standard ASME bolt circle.



Woodlined fittings are available in standard and special designs for all diameters. For catalog and additional information write Dept. CP.



MICHIGAN PIPE COMPANY

Bay City . Michigan

Manufacturers of Wood-Stave, Saran Rubber-Lined, Stainless Steel and Monel Piping. Represented nationally by Saran Lined Pipe Co. Detroit, (Ferndale) Michigan.

When inquiring check CP 1516 on handy form, pgs. 2 - 3

CONSTRUCTION & MAINTENANCE

sizes. Lift-turn-seat operating mechanism converts continuous rotation of crank and lever into the two separate motions of the plug. Valves are available in a number of different models to meet particular requirements.

(Non-Lubricated Lift-Plug Valves are product of Cameron Iron Works, Inc., Dept. CP, P. O. Box 1212, Houston, Tex. . . . or for more information check CP 1517 on convenient Reader Service slip, pages 2 and 3.)

Special corrosion-resistant coatings offered in motor for chemical uses . . .

ratings available from 1 to 40 hp, in NEMA frames up to 405

Uses: In applications involving acids, alkalis, dying and bleaching, canning and packing, and peroxide.

Features: In addition to special treatment these motors receive to make them suitable for chemical applications, added attention is given to protect metal parts against ravages of corrosion. Steel parts are dipped in special corrosion-resisting coating and then baked and painted. Die-cast rotor is sprayed with special corrosion inhibitor. Cast iron end heads and terminal box are cleaned and treated with a zinc chromate and iron oxide primer often specified by government for use in detrimental environments. Sealed-in, laboratory grease permits maintenance-free operation for five years or more.

Description: With ratings from 1 to 40 hp, in NEMA frames up to 405, motors will be available in totally-enclosed and Underwriters' Approved explosion-proof construction. Wide variety of con-

wide variety of construction modifications is available, including a choice of cast bronze, cast aluminum, or castiron constructed ventilating fans.

Cast bronze, cast iron, stainless steel, or flattened expanded metal ventilating grilles may also be specified. Automatic drain-and-breather plugs, as well as stainless steel shafts, can be supplied if desired. All frames are

constructed with stainless steel outer shells.

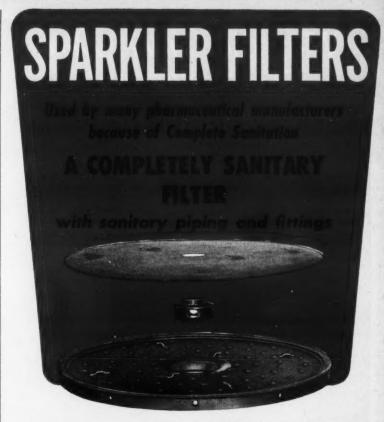
Motor is available in total-

ly-enclosed, explosion-proof

construction

Terminal box on totally-enclosed models is gasketed and power leads are sealed at the shells with a non-hardening compound. Repellent grease at shaft extension hub keeps moisture away from bearings. These bearings, pre-lubricated and sealed on both sides, are double-row width.

(Product of Robbins and Myers, Inc., Industrial Motor Div., Dept. CP, Springfield 99, Ohio . . . or for more information check CP 1518 on handy form, pages 2 and 3.)



You can see at a glance why Sparkler filter plates are the most sanitary plates ever designed.

All surfaces, inside and out, are easily accessible for thorough cleaning. The top screen that supports the filter paper, a center separator, and the bottom plate is all there is to it. These parts can be separated without unscrewing bolts or nuts.

The tie rods of the complete plate assembly holds the plate parts firmly together without danger of bypassing.

With most other types of filter plates the inner surfaces are inaccessible and cannot be cleaned; contaminating particles are locked in and the first run of a new batch frequently must be discarded or rerun through the filter to obtain a pure product.

With Sparkler sanitary plates, a pure product is obtained right from the start, and continues pure with fine sharp filtration to the end of the filtering cycle.

Sparkler filter plates can be removed for cleaning in one unit and a fresh thoroughly clean set lowered into the filter tank. This reduces down time to a matter of minutes.

Sparkler filters are available in stainless steel, monel, nickel, bronze, or Hastelloy, steam or brine jacketed. Available in a range of capacities up to 10,000 G.P.H.



for personal service on your filtration problems

Write Mr. Eric Anderson

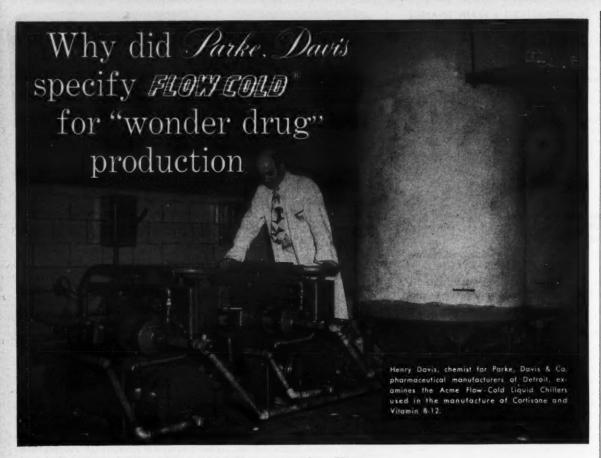
MANUFACTURING COMPANY MUNDELEIN, ILLINOIS

SERVICE REPRESENTATIVES IN PRINCIPAL CITIES

Sparkler International, Ltd.
Prinsengracht 876 Amsterdam, Holland

Sparkler Western Hemisphere Corp. Mundelein, III., U.S.A.

When inquiring specify CP 1519 on handy form, pgs. 2-3



Acres packaged liquid chillers provide efficient operation with lower installation and maintenance costs

Throughout the manufacturing process of the new "wonder drugs" — cortisone, eschatin, and Vitamin B-12 — modern industrial refrigeration plays an important role. At one phase two Acme Flow-Cold Packaged Liquid Chillers (3 h.p. capacity) hold 15 gallons of alcohol per minute at a constant 35 degree Fahrenheit temperature. Later in the process another Acme Flow-Cold maintains an ethylene glycol solution at a minus 10 degrees Fahrenheit.

Parke-Davis selected Acme Flow-Cold Chillers be-

cause of the time and money that could be saved in building the system. Each Acme Flow-Cold is shipped from the factory completely assembled and pre-tested. Installation of a complete chilling system is accomplished in a matter of hours. These installations were so successful Parke-Davis reordered more Flow-Cold units to control the temperatures of other chemical processes.

Write today for catalog FC1-CP.



ACME INDUSTRIES, INC.

JACKSON, MICHIGAN

Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment



Evaporative Condensers Cooling Towers Floor-type Unit Coolers



Direct Expansion (Dry-Ex) and Flooded Liquid Chillers Heat Exchangers, Oil Separators



Shell and Tube, Shell and Coil Condensers Receivers, Pipe Coils



Packaged Liquid Chillers to 225 tons



Flow-Cold Liquid



Convectors for Heating and Cooling

Continuously serving the refrigeration and air conditioning industry since 1919

When inquiring check CP 1520 on handy form, pgs. 2-3

Expanding Chemical Production

Monsanto goes into polyethylene for molding, fabricating

Monsanto Chemical Co. is entering the field of polyethylene plastics manufacture for molding and fabricating and expects to get into production early in 1955.

Initial annual capacity of the new plant, the site of which has not been announced, will be approximately 65 million lb — with a 50 per cent increase projected for 1957. This is expected to represent nearly 20 per cent of the total polyethylene capacity for that year, or 22 per cent of the market forecasted for that year.

Products from the new manufacturing unit will include styrene, phenolics, cellulosics, vinyls, aminoplasts and polyethylene.

The firm has also announced a 50 per cent expansion in production of its vinyl butyral interlayer used by the automotive industry in laminated safety glass. The company reports it now serves about 60% of the domestic market for the product.

Chemicals, synthetics, rubber, plastics will undergo closer scrutiny

United States Rubber Co. has signed a conditional purchase contract for approximately 80 acres of land in Emerson, N. J. on which the company plans to create a new research center for basic research in the fields of rubber, chemicals, synthetics, textiles and plastics. Construction is expected to begin this year.

More crude tar products slated for West Coast from new plant

A new plant at Fontana, Calif., operated by Tar Products Div. of Koppers Company, Inc., has begun producing a general line of products for west coast markets from crude tar which comes from Kaiser Steel chemical-recovery coke ovens.

The Fontana unit is Kopper's 55th plant in the nation, and is the 23rd in the company's Tar Products Division.

Use liquid tank storage farm setup to speed chemicals delivery

To speed distribution of its liquid chemicals to Eastern markets, Dow Chemical Co. has entered into a contract for use of a 3.25 million gallon tank storage farm to be built at Bayonne, N. J. Construction of the tanks began early this month.

The new storage will be equipped to re-ship materials in tank cars and tank trucks or re-package

them in drums within 24 hours after customer orders have been received. Facilities will service customers located up to several hundred miles from Bayonne.

Products include caustic soda, carbon tetrachloride, perchloroethylene, methylene chloride, glycols and chloroform shipped by coastwise tanker from the company's Texas Division at Freeport, Texas.

For several years the company has been distributing materials from other tank farms in New Jersey.

20,000 barrels per day will take 45 mile trip via pipe

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Construction of an 8-inch pipeline, approximately 45 miles long, and which will have a capacity of 20,000 bpd, between Toledo, Ohio, and Inkster Junction, west of Detroit, Mich., was to have been begun by the Sun Pipe Line Co., a Sun Oil Company subsidiary. Completion of the line, estimated to cost \$1.3 million, is scheduled for Oct. 1.

The line will handle delivery of products from the Toledo refinery to the company's marketing terminal at River Rouge, Mich. It is part of an expansion program tied in with the construction of Sun's \$14 million Sarnia, Ontario refinery which is under construction and also scheduled for completion in October. The new line will generally parallel an existing Sun Pipe Line Company products line extending from Toledo to Sarnia.

Begin \$19 million plant for nitrogen, expect output in '54

Construction of a \$19 million nitrogen plant on a site near Memphis, Tenn. is to get underway this month for the Grace Chemical Co., wholly-owned subsidiary of W. R. Grace & Co. The plant is scheduled to go on stream in the summer of 1954.

Fertilizer producing unit planned for Missouri

Construction of a chemical fertilizer unit to be built near Joplin, Mo. and at an approximate cost of \$3.5 million is scheduled to start in the summer of this year for the Missouri Farmers Association. Initial operation is planned for the summer of 1954.

Capacity is to be 75 tons per day of P_2O_5 in the form of phosphoric acid. Other finished products are to be triple superphosphate and a wide range of high-analysis granular fertilizers averaging 40 and 55 per cent total plant food.

Construction of tall oil plant begins in Alabama

Construction has begun on a \$2.7 million plant by Newport Industries, Inc. at Bay Minette, Ala. for tall oil processing.

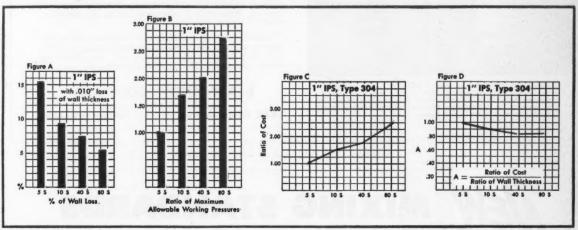
take a closer look at

Stainless steel Schedules



Don't be "penny wise and pound foolish" where stainless steel piping is concerned. The most economical choice does not always imply the least initial cost as working pressure, methods of joining, installation costs and allowance for loss by corrosion

are critical factors. This is particularly true where costs resulting from failures in service—replacement of equipment and lost production due to down time—may exceed the initial cost of the piping.



CORROSION RESISTANCE

For long service life it is advisable to allow for some loss in wall thickness where stainless piping is employed to combat severe corrosion. As shown in Figure A even a small loss means an appreciable percentage loss of wall thickness in the lighter weight schedules.

WORKING PRESSURES

As shown in Figure B, the heavier pipe schedules permit higher working pressures, thus perhaps permitting the use of smaller diameter piping, or offering greater flexibility for subsequent changes in operational procedures.

COSTS

Although the lighter schedules cost less, as shown in Figure C, you actually get more for your money with the heavier schedules because the ratio of increase in cost is less than the ratio of increase of wall thickness (Figure D).

1" IPS



While various types of fittings are available for the lighter weight pipe schedules, they should be examined carefully as to initial cost, installation cost, working pressure permitted and ease of adaptation to existing lines.

Whatever your stainless piping problems, Mr. Tubes—your B&W Tube representative—can provide valuable assistance. Consult him for advice on the stainless piping or tubing that will afford optimum cost-life ratio under your service conditions.

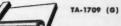
Methods of Joining & Installation Costs

From the standpoints of economy and ease of installation, it is extremely important that attention be given to methods of joining, fittings, etc. because:

 Schedule 40 IPS is the lightest weight pipe specifically designed for threading.

 Fittings which provide a good thread and also afford structural strength at the joint are not commercially available for lighter weight pipe.

 Field welding of thin wall pipe is difficult.
 Misalignment of connections can cause high installation costs.



THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing Alliance, Ohio—Welded Carbon Steel Tubing

When inquiring check CP 1521 on handy form, pgs. 2-3



Buffevak Crystallising Kettle, 2000-gal. with one-piece, cast body equipped with a steel jacket. Beryillum copper scrapers keep hearing surface clean and give safe operation in handling an inflammable material. Spray nozzles apply cooling medium in the jacket space.

BUFLOVAK-DOPP PROCESSING KETTLES

Serve Many Industries with

Dependable Performance and

Profit-Building, Low-Cost Operation

M odern BUFLOVAK-DOPP Processing Kettles are a vital part of many processes in the Chemical and Food Industries. They successfully perform a number of basic operations; such as, heating, cooling, mixing, extracting, reacting, distilling, evaporating, drying, and solvent recovery.

Many operations can be progressively performed in the same unit; thereby speeding up production, lowering investment cost, and increasing profits!

Other profit-building features are new and improved types of Agitators that give great savings in production time.

Whether you are in need of new equipment or possible improvements in your present process methods, you will find many helpful suggestions in our new Processing Kettle Catalog No. 356. Send for a copy.

BLAW-KNOX COMPANY

1645 Fillmore Ave. Buffalo 11, N.Y.

When inquiring check CP 1522 on handy form, pgs. 2-3

NEW

MIXING STANDARDS for Fluids and Pastes

The Abbé Dispersall Mixer disperses pigments and other solid ingredients completely in a fraction of the time required by conventional mixers. Eliminates all pre-mixing. Produces superior products.

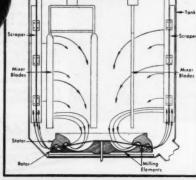
The Abbé Dispersall Mixer will cut down batch-time on rubber-based

paints...toothpastes...plastic molding compounds...ointments...clay slip...printing inks...and all other kinds of pastes and emulsions where thorough dispersion and fast mixing are essential.



The mixing pattern of Dispersall mixing blades.

Section through Abbé Dispersall Mixer for Pastes. Note the flow of the mix.





ABBÉ ENGINEERING CO. . 46 CHURCH STREET, NEW YORK 7, N. Y

ABBE ENGINEERING Ball. Pebble and Jar Mills

When inquiring check CP 1523 on handy form, pgs. 2-3

Features disposable filter in compressed air cleaner

"Instrument-quality" air is now available from ordinary plant air. Two-page data sheet describes combination dehydrator-filter which removes water and sludge from compressed air. Both entrained and vaporized water and oil are removed by the water-cooled condenser. Dew point is reduced to within 2 or 3 degrees of cooling water temperature. Dirt and other solid particles are filtered by the disposable filter cartridge. Data includes applications and recommended usage.

Data sheet on Mod B-30-D Condensifilter is issued by Hankison Corp., Dept. CP, 141 Biltmore Bldg., 951 Banksville Rd., Pittsburgh 16, Pa. When inquiring specify CP 1524 on handy form, pages 2 and 3.

Cast-on, plastisol threads feature of clay pipe

Illustrated folder and bulletin explain many applications of industrial clay pipe which employs phenolic collars and cast-on threads of plastisol to make a tight, acid resistant joint. It can be deflected as much as six degrees without leakage.

Usable indoors or outside, pipe comes in threefoot lengths. There is a complete line of a dozen fittings to solve every installation problem. Joints are ideal for industrial service — tough, rugged, waterproof, and unaffected by vibrations or common industrial chemicals.

"Robinson Screw-Seal Industrial Pipe" is issued by The Robinson Clay Product Co., Dept. CP, 65 W. State St., Akron 9, Ohio. When inquiring specify CP 1525 on handy Reader Service slip, pages 2 and 3.

Outlines properties, uses of structural plastic

Complete engineering facts, including information on fabrication and design factors, physical strength and chemical resistance of unplasticized, rigid polyvinyl chloride are provided in 6-page, two-color bulletin. Resistance characteristics of plastic are charted to clearly indicate its applicability to specific industrial corrosion problems, as well as its resistance to specific reagents at both low and high temperatures.

Detailed tabulation of physical properties emphasizes structural fitness of this lightweight, self-supporting material for various forms of corrosion-proof construction. Techniques of unplasticized, polyvinyl chloride fabrication are also discussed in bulletin, with illustrations of fume

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exhaust systems, tanks, ducts, dipping baskets, and similar products made from the plastic.

Bul 9-1 is issued by Atlas Mineral Products Co., Dept. CP, 26 Ash St., Mertztown, Pa. When inquiring specify CP 1526 on handy form, pages two and three.

Topics in chemical economics discussed in factual bulletin

Informative, 4-page bulletin reviews developments and prospects in several branches of chemical economics. Featured article deals with various revisions in US patent law, while other sections are concerned with drilling mud additives, non-ionic detergents, feed additives, metallurgical services and a high-temperature vapor phase cracking process for production of both olefinic and aromatic chemicals from petroleum naphtha.

"Chemonomics," Vol 4, No. 2 is available on letterhead request to R. S. Aries & Associates, Dept. CP, 400 Madison Ave., New York 17, N. Y.

Sketches explain application of entrainment separators

Eight-page two-color bulletin tells how purifiers (mechanical separators) are used in the petroleum, chemical, food and other industries to get rid of moisture, dirt, and other entrainment in pipelines and equipment. Line drawings illustrate how the units can be employed in boilers, steam lines, evaporators, concentrators, air and gas lines, intercoolers, bubble cap towers, reactors, and also in vacuum canning equipment.

Back cover has finished drawings of the different types of purifiers supplied by the manufacturer. Bul 700 is issued by V. D. Anderson Company, Dept. CP, 1935 W. 96th St., Cleveland 2, Ohio. When inquiring specify CP 1527 on handy form, pages 2 and 3.

Trucks offer capacity range of 48,000 lb

Heavy-duty ram and fork trucks, with capacities from 12,000 to 60,000 lb, are available in 11 different models. Engineering features and specifications of various units are summarized in colorful, 8-page booklet. Units are detailed according to load capacity and overall dimensions.

Bul B-391 is issued by The Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave, Cleveland 3, Ohio. When inquiring specify CP 1528 on handy form, pages 2 and 3.



You turn on the steam.

This little stainless steel valve—the only moving part in the Yarway Impulse Steam Trap installed on the equipment—opens wide and stays open as the air and condensate continuously pour through.

The equipment reaches production temperature in the quickest possible time.

Production temperature reached, the little valve <u>snaps shut</u>. After that, by a pulsating action, it discharges all condensate as it forms—even a tiny teaspoonful. There's hot steam in the equipment all the time...steady, maximum temperatures are maintained.

It all adds up—to more production per day.

Other profit-making features of the Yarway Impulse Steam Trap—low initial cost, easy installation, stainless steel construction, low maintenance, good for all pressures, quick delivery from over 200 local industrial distributors.

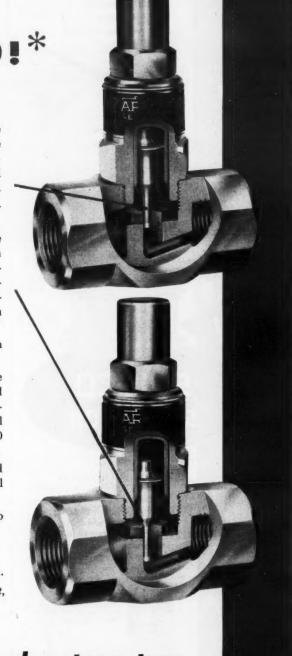
Try a Yarway—free for 60 days—and *prove* its advantage. Your distributor will supply you.

For free Yarway Impulse Steam Trap Bulletin T-1740, write...

YARNALL-WARING COMPANY

125 Mermaid Ave., Philadelphia 18, Pa.

*... resulting in fast heat-up of equipment, more production per day.



YARWAY | impulse steam trap

When inquiring check CP 1529 on handy form, pgs. 2-3





Processing and Engineering Data



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Specific Gravities of Organic Chlorine Compounds

By D. S. DAVIS

Professor of Chemical Engineering Virginia Polytechnic Institute

P OR a number of organic chlorine compounds, specific gravities at temperatures (t) referred to water at 20°C are linear with temperature over wide ranges. This linear relationship is the basis of accompanying line coordinate chart. Chart enables convenient and accurate estimation of specific gravity for nine such compounds between -20° and 54°C.

Chart was constructed from authoritative data¹ by methods previously described².

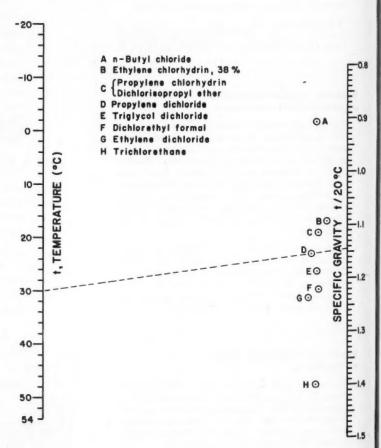
Typical Example

What is the specific gravity at 30°C of propylene dichloride?

Connect 30 on temperature scale with point D for propylene dichloride and read desired specific gravity (relative to water at 20°C) as 1.145.

LITERATURE CITED

- 1) "Organic Chlorine Compounds," Carbide and Carbon Chemicals Corp., Fig 3, p 16
- 2) Davis, "Empirical Equations and Nomography," McGraw-Hill, (1943)



-Chemical Processing - May, 1953 -

When inquiring check CP 1530 on handy form, pgs. 2-3

4800 Santa Fe Avenue, Los Angeles 58, Calif.

Book describes nuclear reactors for industry

Volume is devoted to various aspects of small nuclear reactors for experimental purposes in industry. It has been assembled with the aid of special contributions from experts in the field of nuclear energy. Handbook describes nuclear reactors in some detail. It indicates the approach to selecting research reactors, explains their methods, and offers, in concise analysis, some cost studies and contract procedures. In addition, book outlines practical method of building a small reactor for experimental work.

"A Handbook on Small Research Nuclear Reactors for Universities and Industry" is available from Publication Dept., Radiation Counter Laboratories, Inc., Dept. CP, 5122 W. Grove St., Skokie, Ill. When inquiring specify CP 1531, pgs. 2 & 3.

Electric control thermometers available in circular cases

Used for control on industrial equipment such as paint drying ovens, cooking kettles, degreasers and plating tanks, electrical control thermometers are designed to permit wall or flush panel mounting. A variety of switching actions is available for operation of solenoid valves, motorized valves or other devices.

Types of thermometers available, actuating elements, control mechanism and control operation are described in illustrated, 10-page catalog. Cat 6482 is issued by Station 40, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 1532 on handy form, pages 2 and 3.

Uses no moving parts during filtration

Vertical stainless-steel welded pressure-leaf filter, designed for use in the refining and processing of sugar and related products, uses no moving parts during filtration. This feature eliminates complicated mechanical assemblies that cause shutdowns and repair. In addition, leaves are readily accessible at all times and are easily changed when necessary.

Additional features of the units include elimination of filter cloths, high-speed filtration, minimum floor space requirements, pressure-tight construction — eliminates leakage and drainage of product, bacteria-free liquors, uniform cakes and high-temperature operation.

Complete information on sizes and capacities as well as performance data are included in 6-page bulletin. Bul S-1251 is issued by Niagara Filter Corp., Dept. CP, 3080 Main St., Buffalo 14, N. Y. When inquiring specify CP 1533 on handy form, pages 2 and 3.

Only PYREX® CASCADE COOLERS



- Stop chemical attack inside tubes
- 2 Permit use of low cost water as coolant

You're doubly protected against corrosion—doubly assured of processing economies with Pyrex brand Cascade Coolers. First, you can count on long service life with low replacement costs because of their exceptional resistance to practically all liquids. Second, you can use low cost sea or river water as a coolant. Then, too, Pyrex Cascade Coolers offer you:

DURABILITY—They withstand rapid temperature changes and mechanical shock and the corrosive action of chemicals.

ASSURED PRODUCT PURITY—They provide positive protection for CP chemicals, drugs, foods and other products susceptible to contamination.

FURTHER ECONOMY-Low in first cost per

BTU transferred, Pyrex brand Cascade Coolers have "glass-smooth" surfaces which resist scale formation—keep efficiency up... cleaning and maintenance costs down.

HIGH VERSATILITY—You can mount them on floor, wall or ceiling to conserve space—use them in series or parallel. Shipped complete, an eight-tube unit requires only a few hours for assembly by your own men.

Handy nomographs and tables to help you compute your heat transfer requirements, along with a complete description of PYREX Cascade Coolers are included in Corning's new Technical Bulletin PE-8. Send for your copy today. Mail the coupon below.



CORNING GLASS WORKS CORNING, NEW YORK

Corning means research in Glass

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CORNING GLASS WORKS, Dept. CP-5, Corning, N.Y.

Please send me a copy of Technical Bulletin PE-8, "Pyrex Cascade Coolers" and name of nearest distributor.

NAME	TITLE
FIRM	***************************************
ADDRESS	***************************************

When inquiring check CP 1534 on handy form, pgs. 2-3



Top efficiency in valve operation is guaranteed when you install Fabri-Valves. To eliminate breakdowns Fabri-Valves are designed and fabricated from stainless steel, monel or any combination alloy plate to meet your specific need. There are no porous areas in Fabri-Valves. They are complete weldments of rolled plate which also assures exact thickness. Fabri-Valves are especially recommended for use in conjunction with lightweight, modern pipe.

These rugged... durable light-wall valves are cheaper to ship and easier to install. Maintenance cost is reduced to a bare minimum. 2" to 24" Fabri-Valves carried in stock...special orders filled within 30 days. Contact your nearest dealer.



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FELKER BROS	shfield, Wis.
NORTHWEST COPPER WORKS, IncPo	ortland, Ore.
THOS. W. MacKAY & SON, Ltd	couver, B.C.
CHANDLER BOYD COPittsburg	gh 19, Penn.

When inquiring check CP 1535 on handy form, pgs. 2-3



Processing and Engineering Data



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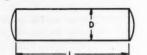
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Sizing Horizontal Tanks

By ROBERT HLAVIN Long Beach, Calif

E CONOMICS indicate that length/diameter ratio of horizontal cylindrical tanks should be between 2 and 5. Nomograph presented here permits rapid estimation of tank dimensions for capacities between 100 and 100,000 gallons.

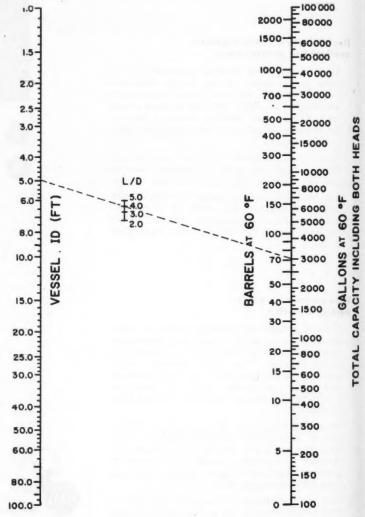


L = length of tank from tangent line to tangent line (feet) D = inside diameter of tank (feet)

Typical Example

What will be the dimensions of a horizontal cylindrical tank (L/D = 4) to hold 3000 gallons?

Connect 3000 gallons with L/D of 4. Read tank diameter as 5.0 feet. Tank is to be four diameters long, hence 20 x 5' diam.



—Chemical Processing — May, 1953.

Cranes, fork, platform trucks described in manual

Manufacturer's entire line of platform, and fork trucks and floor cranes are described in 12-page illustrated manual.

Construction features and details of trucks and various components are shown with general operating photos and complete specifications. Similar information is given for the floor cranes.

In addition to the breakdown of various units, one page is devoted to action "shots" of a dozen attachments. Shown are the die handler, pallet retriever, upender, cable reel handler, side dump revolving unit, roll handler with apron, tin plate clamp, bale clamp, twin coil handler, roll clamp, roll piercing truck, and three-ton low lift, one-ton crane.

Manual is issued by Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio. When inquiring specify CP 1536 on handy form, pages 2 and 3.

Quiet, efficient operation provided by cooling tower

Quiet, efficient operation is featured in mechanical draft cooling tower described in 4-page bulletin. Complete performance data and specifications are given on three separate series of cooling towers ranging in capacity from 1 to 108 tons of refrigeration. Towers are of spray deck construction and use squirrel cage blowers to create mechanical forced draft.

Bul 47-B is issued by Water Cooling Div., Binks Manufacturing Co., Dept. CP, 3122 Carroll Ave., Chicago 12, Ill. When inquiring specify CP 1537 on handy form between pages two and three.

Dryer is constant temperature, variable-heat input unit

In contrast to direct heat dryer, steam tube drying unit is a constant temperature and variable heat input machine wherein, although drying temperature is established by pressure of steam supply, amount of steam condensed is in direct proportion to work done. Unit is essentially a rotary dryer of the indirect type using dry saturated steam as the heating medium.

According to informative bulletin, additional features of unit include elimination of case hardening, minimum air flow, continuous removal of condensed steam and low temperature drying. Features of construction, applications and specifications are given in booklet.

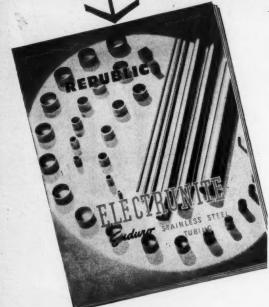
Bul 53 is issued by Process Equipment Div., General American Transportation Corp., Dept. CP, 135 S. LaSalle St., Chicago 90, Ill. When inquiring specify CP 1538 on handy form, pages two and three.



When inquiring check CP 1539 on handy form, pgs. 2-3



this Data Booklet STAINLESS STEEL TUBING



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210

ECTRUNITE®

STAINLESS STEEL TUBING AND PIPE

Made by the Producers of ELECTRUNITE-The Original Electric Welded Boiler Tube

When inquiring check CP 1540 on handy form, pgs. 2-3



Processing and Engineering Data



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Viscosity Reference Data

Prepared from "FLUID DENSITIES AND VISCOSITIES" A Publication of FISCHER & PORTER COMPANY

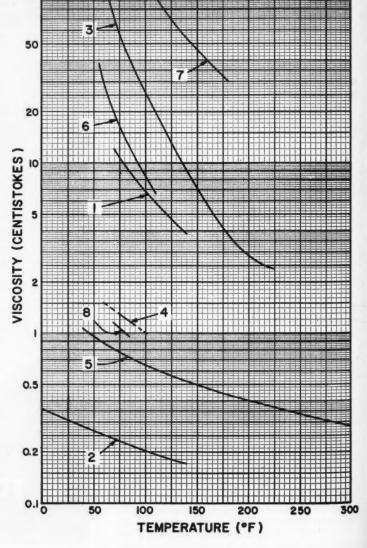
V ISCOSITY-TEMPERA-TURE curves presented here are typical of the 181 such curves available in a bound 81/2 x 11-inch Density and Viscosity Reference Book. These curves (and similar curves showing density-temperature relation) cover the usual temperature for substances in question. They have been drawn, for the most part, from prominent manufacturers' data and in some cases data from two manufacturers of the same material were used. All curves are documented.

Typical materials covered by book include: molasses, fats & oils, soap & cosmetic components, syrups, physiological fluids, petroleum and related, gases, acids & bases, inorganics, organics, and specialty (tanning, paper, textile) liq-

To obtain "Fluid Densities and Viscosities," remit \$1 direct to Fischer & Porter Company, Dept. CP, Hatboro, Pa.

Key to viscosity curves

- I-Bensol absorber oil
- 2-Butadiene
- 3-Cyclohexanol
- 4-Furfural
- 5-Styrene
- 6-Glycerine triacetate
- 7-Nitrocellulose lacquer
- 8-Parenamine



Chemical Processing — May, 1953 —

Standards for pentachlorophenol wood preservative

Publication sets forth minimum requirements for one type of pentachlorophenol concentrate for wood preservation and soil poisoning. This type is intended for dilution with 10 parts of diluent to 1 part of concentrate before use. It specifies requirements and methods of testing for flash point, weight per gallon, stability in storage, color, and active ingredients content.

TS-5176 is issued by Commodity Standards Div., U.S. Dept. of Commerce, Washington 25, D. C.

Rapidly determines compositions of stearic and palmitic acids

Based on titer and iodine value tests only, simplified method permits rapid determination of the composition of commercial stearic and palmitic acids. Method is claimed to have an accuracy within 1-1/2% as compared with an accuracy of 1% normally obtained by more complex fractional distillation methods.

Test procedures and necessary curves are contained in Technical Bul 43 issued by Dept. 5, Emery Industries, Inc., Dept. CP, Carew Tower, Cincinnati 2, Ohio. When inquiring specify CP 1541 on handy form, pages 2 and 3.

No wrenches, special tools required for flexible gear couplings

Data, specifications on flexible gear couplings is given in 16-page, two-color catalog. Couplings have several features: more horsepower with less size, weight; can be assembled, uncoupled in seconds; no wrenches, special tools required; safe and silent as smooth shafting. Bulletin illustrates different couplings, gives engineering data.

Cat C 4 is issued by Sier-Bath Gear and Pump Co., Inc., Dept. CP, 9252 Hudson Blvd., North Bergen, N. J. When inquiring specify CP 1542 on handy form, pages 2 and 3.

Controls set, reduces water content of concrete

Theory and practice of obtaining a good concrete is subject of 6-page, three-color booklet. Text features concrete densifier which controls set of concrete and reduces water content without increasing air content for effects of uniformity, crack resistance, water-tightness, and surface hardness. Booklet also illustrates and gives specifications and uses of concrete densifier. AIA File 7 is available from Sika Chemical Corp., Dept. CP, 35 Gregory Ave., Passaic, N. J. When inquiring specify CP 1543 on handy form, pages 2 and 3.



Air at Detroit Sulphite supplied by a

FULLER ROTARY COMPRESSOR



Write for Bulletin C-6

One of the most unique and interesting pulp and paper mills in the country, that of the Detroit Sulphite Pulp and Paper Company, Detroit, Michigan, uses a Fuller Rotary Two-stage Compressor to supply most of the air required for its many operations. This machine, shown above, has a capacity of 772 c.f.m., at 80 pounds gage, actual free-air delivery.

Detroit Sulphite has joined no small family of users of Fuller Rotaries: food and chemical plants, steel mills, cement plants, refineries, automobile plants, and many others depend on the reliability of Fullers wherever air is required.

Fuller Compressors require minimum maintenance because only the rotor, blades, and bearings move. No valves to leak or seats to grind. Blades automatically compensate for wear, insuring maintained capacity for the life of the machine.

Whether your air-plans call for single-stage, two-stage—single-stage duplex or two-stage duplex—you can be sure Fuller has the compressors which gives you a dependable source of pulsation-free air up to 3300 c.f.m., 125-lb. per square inch pressure.

FULLER COMPANY—CATASAUQUA, PA.

Branch offices

Chicago-San Francisco-Los Angeles-Seattle-Birmingham

Fuller

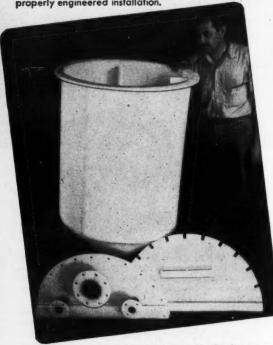
PIONEERS OF HIGH-EFFICIENCY VANE-TYPE ROTARY COMPRESSORS

When inquiring check CP 1544 on handy form, pgs. 2-3

SING



Agile's high-grade thermoplastic construction materials
—AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we
specialize, are your safeguard for an economical and
properly engineered installation.



40-gals. Acid Make-Up Tank complete with baffles, removable bi-sectional cover, and fittings, fabricated throughout from AGILENE.

SEND YOUR INQUIRIES TO



When inquiring check CP 1545 on handy form, pgs. 2-3



Processing and Engineering Data



44

Estimating Paraffins in Toluene

By GEORGE E. MAPSTONE

Edited By D. S. DAVIS

Professor of Chemical Engineering, Virginia Polytechnic Institute

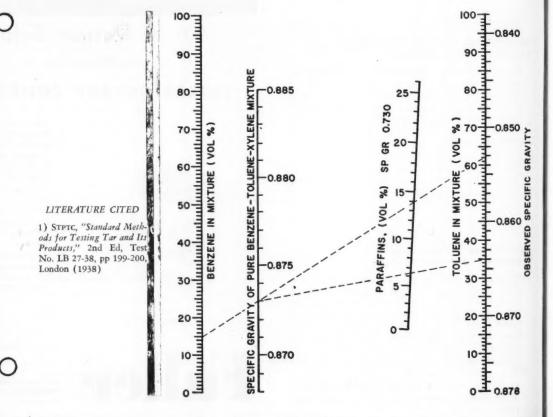
S INCE paraffins have an appreciably lower specific gravity than aromatics, minor percentages of paraffin can be determined in aromatics by measuring specific gravity of the mixture. Basic assumptions of this method¹ are that paraffins have a specific gravity of 0.730 (15°C/15°C) and that they are uniformly distributed throughout the boiling range.

Accompanying nomograph is used to calculate specific gravity for benzene-toluene-xylene fraction. Paraffin content is estimated by comparing calculated and actual specific gravity.

Typical Example

Sample contains 15 per cent benzene and 23 per cent xylene and has a measured specific gravity of 0.864 at 15°C. What is the paraffin content?

Toluene content is taken as 62 per cent by difference (100–15–23). Connect 15 on benzene scale at left with 62 on toluene scale at right. Read 0.873 as specific gravity of a paraffin-free mixture. Now connect this point (0.873) with 0.864, the actual specific gravity at right. Paraffin content is 6.3 per cent.



Chemical Processing — May, 1953

Handles 6000 gph and is easily handled

A gasoline engine driven pump which is easily portable — net weight 55 lb — is described in four-page bulletin. Unit will handle 6000 gph at 17' suction lift (including friction) against 17' total head, and will prime in less than 30 sec with pump 10' above water. Publication mentions 27 uses for the pump, which has a 2 hp 4 cycle engine.

This centrifugal pump has a casing of aluminum and accommodates $1\frac{1}{2}$ " pipe at suction and discharge ends. Bul 151 is issued by Carver Pump Co., Dept. CP, Muscatine, Iowa. When inquiring specify CP 1546 on handy form, pages 2 and 3.

Gives specifications, features of pyrometric switches

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SSING

Twelve-page, illustrated catalog deals with rotary, key and plug type pyrometric switches, designed specifically for thermocouple and resistance thermometer bulb circuits. Units are used wherever it is necessary to switch an indicating millivoltmeter, indicating and/or recording potentiometer, or resistance bridge instrument from one measuring point to another, or to disconnect the instrument from the measuring element.

Specifications, features and construction of the three types of switches are outlined and illustrated in informative catalog. Dimensions, mounting details and switch circuits are also included. Cat 5800 is issued by Station 40, Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 1547 on handy form, pages two and three.

Useful in low-pressure fabrication of reinforced plastics

Light-colored liquids of varying viscosities, polyester resins are 100% polymerizable alkyds developed for low-pressure fabrication of reinforced plastics. Resins cure to transparent, infusible, insoluble solids without elimination of volatile by-products, when catalyzed with organic peroxides. Curing may be accomplished at either room temperature or with application of heat, depending upon selection of catalyst.

Informative, 24-page bulletin outlines industrial applications of polyester resins as well as discussing three fabrication methods for polyester-glass compositions — matched die molding, wet lay-up, and casting. In addition, catalysts, fillers, and pigments used with resins are described.

Bul CDC-238 is issued by General Electric Co., Chemical Div., Dept. CP, 1 Plastics Ave., Pittsfield, Mass. When inquiring specify CP 1548 on handy form, pages 2 and 3.



When inquiring check CP 1549 on handy form, pgs. 2-3

GALLAHER Air-Vans®

Thousands of industrial applications where safe, positive air changes are necessary are now within the range of economical power roof exhausters.

You get performance because Gallaher Air-Vans are the only units with patented, built-in, scroll effect. Extensive Gallaher research has shown that without this feature efficiency against even normal static pressure is not

In the new belt driven Air-Vans up to 4" S.P. is developed. No other power roof exhauster can even approach this figure.

These are not idle claims. Published Air-Van ratings are the result of recognized, physical tests of the entire unit by an independent laboratory. They are not calculations or inter-





Patents 2526290, 2188741

To this add weatherproof design, safe fume removal, low silhouette, and many others. Ask a Gallaher representative or write to Department C-3.

The GALLAHER Company

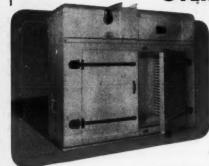
4108 DODGE STREET OMAHA, NEBRASKA



Air-Max Power Roof Exhausters

When inquiring check CP 1550 on handy form, pgs. 2-3

You Get Uniform Results with YOUNG BROTHERS **OVENS** and **DRYERS**



chemicals and pharmaceuticals

•Young Brothers Ovens and Dryers are designed to meet the needs of the chemical field for accurate, efficient, trouble-free service. They are engineered and built to secure uniform results because of their exclusive method of providing accurately controlled temperatures and positive air circulation. Leading firms using Young Brothers Ovens are: Eli Lilly Co., E. I. Dupont De Nemours & Co., Goodyear Tire & Rubber Co., General Foods, Parke, Davis & Co., Upjohn Co., Glidden Co.,

Standard and Special Designs — Batch and Conveyor Types are available to fit your particular process.

Write for Bulletin 17

YOUNG BROTHERS COMPANY

1825 Columbus Road

Cleveland 13, Ohio

When inquiring check CP 1551 on handy form, pgs. 2-3

NEW LITERATURE

Dock handling efficiency, capacity increased

Four-page, 2-color brochure illustrates and describes two units designed to increase handling efficiency on shipping and receiving docks.

First unit, called Adjust-A-Dock, bridges differences in height between docks and rail cars or highway trucks, so that goods flow directly to and from the building and the carrier. It is said that unit can more than triple freight-handling capacity, cutting handling time by maintaining proper carrier and dock alignment at all times. Adjust-A-Dock can be installed recessed in dock or in front of dock.

Second unit, called Adjust-A-Truck, is useful for those firms that do not have adequate room on or in front of their docks to install adjustable dock ramps.

Unit is set into pavement in front of dock and by means of heavy-duty electric hydraulic system adjusts each vehicle to dock height. Its capacity is 40,000 pounds.

Brochure on Adjust-A-Dock and Adjust-A-Truck is issued by Rowe Methods, Inc., Dept. CP, 2534 Detroit Ave., Cleveland 13, Ohio. When inquiring specify CP 1552 on handy form, pages 2 and 3.

Describes apparatus for lab use

A hollow spindle stirrer, a photomicrographic camera, and a complete line of dual-range box furnaces are among the numerous items of laboratory equipment described in a recent issue of manufacturer's house organ. Other items of interest include: a laboratory glassware washer, a pouring spout for bottles, balance weights, micropipets, and a safety head centrifuge. Feature article deals with activities at the Naval Medical Research Institute.

"Eberbach Announcer," No. 53-3-50, is issued by Eberbach & Son Co., Dept. CP, 200 E. Liberty St., Ann Arbor, Mich. When inquiring specify CP 1553 on handy Reader Service slip, pages 2 and 3.



When inquiring check CP 1554 on handy form, pgs. 2-3



FLEXIBLE COUPLINGS

Soundly engineered, LOVEJOY Flexible Couplings provide maximum alignment correction for smooth power transmission. Vibration, starting torque and shock of intermittent loads are dampened and absorbed. Operational efficiency and econ-

omy is increased, motor and machine protected -their service life lengthened. The end result is not only a more profitable, but an improved finished product.

There is a LOVEJOY Flexible Coupling for every requirement. Cushions are made of ma-terials best suited to the load conditions.

Write today for Catalog and Handy Selector Chart

W. Lake Street Chicago 44, Illinois
Also Mfrs. of Lovejoy Universal Joints and Variable Speed

When inquiring check CP 1555 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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Shows operations, facilities of chemical manufacturer

Illustrated, 20-page booklet outlines background and operations of supplier and manufacturer of range of chemical products. Picture story gives brief explanation of major production activities and shows equipment and methods used.

Numerous photographs picture research and quality control facilities; manufacture of various latex compounds, polymers, solvent rubber compounds and adhesives; and various general processing operations. Brief summary outlines historical background and development of company.

"UBS" is issued by Union Bay State Chemical Co., Inc., Dept. CP, 491 Main St., Cambridge 42, Mass. When inquiring specify CP 1556 on handy form, pages 2 and 3.

Uses, types, specifications of water hose described

In addition to hose for general water service, four-page catalog describes types of water hose designed for specialized uses. These include long length, heavy-duty hose for construction projects, road building and other high pressure uses; large diameter hose for high pressure water and air service in pile-driving operations, hydraulic bank grading, stripping and sluicing, and for heavy duty service in mines and quarries where abrasion on cover is severe.

Water hose for use in paper and pulp mills features a hose tube designed to withstand hot (200°F) water without swelling.

Cat 4800 available on request from The B. F. Goodrich Company, Dept. CP, 448 S. Main St., Akron, Ohio. When inquiring specify CP 1557 on handy form, pages 2 and 3.

Motor control drives provide smooth, stepless control

Thyratron motor control drives offer precise speed regulation, pre-set speed control and smooth, stepless speed control. Units are available in two types — a precision-controlled unit for 3/4 to 10-hp applications and a simplified drive for 3/4 to 3-hp applications. The precision-controlled unit finds use on machine tools, reeling equipment, processing equipment, conveyors and textile machines, while the simplified unit has applications on testing equipment, conveyors and variable-volume or proportioning pumps.

Components, operation, operating characteristics, specifications and dimensions of drives are given in two bulletins — Bul GEA-5827 describes the precision-controlled unit, and Bul GEA-5829 deals with the simplified drive.

Bulletins are issued by General Electric Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 1558 on handy form, pages 2 and 3.

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THE RIGHT SOLUTION

is a conference with

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When you sit down with Proctor engineers to discuss a processing equipment problem you are taking the shortest path to the surest solution. You are availing yourself the benefit of a breadth and depth of experience that is virtually unequaled in any other single equipment manufacturer.

The result—carefully designed, well built equipment that will meet precisely the need for which it is created.

Proctor project engineered equipment is operating today in all branches of the process industries—heavy chemicals, pharmaceuticals, food, leather tanning, synthetic textiles, rubber manufacturing, plastics and many more.

With their wide range of experience in building individually designed drying and fiber processing machinery—Proctor engineers are well equipped to apply their skill to developing, engineering and manufacturing other processing machinery. This machinery may be related to drying equipment and used in the same range—or it may be totally unrelated but require the same basic kind of engineering and manufacturing skill.

If you have a problem involving processing equipment—write us today in as much detail as possible. It is the first step toward the right solution.

PROCTOR CREATIVE ENGINEERING AT WORK

Wide Range of Proctor Equipment Available for Processing Synthetic Fibers and Yarns

Over the years Proctor engineers have worked closely with the technicians of the textile and chemical companies in the development of equipment for the processing of synthetic fibers. Their association with the production of manmade fibers goes back to the very earliest days of the industry—and has kept step with it as it has developed at such an accelerated pace during recent years. Proctor equipment used in processing synthetic fibers and yarns includes:

- Rayon textile filament yarn bobbin and cake dryers for straight drying or drying in high humidity cycles for the ultimate in uniformly shrunk dried yarn.
- Tow dryers of conveyor and drum or contact type for synthetic yarns in tow form.
- 3. Polymer dryers of the conveyor type.
- Cut staple dryers of conveyor type for various drying processes for all types of synthetic fibers.
- Batch and continuous conveyor type dryers for waste.
- Electronic dryers (induction type) for rayon cakes drying, twist setting, tire cord, etc.
- Cotton linter conveyor type dryers for bleached linters and for redrying linters.
- 8. Batch and automatic conveyor type dryers for synthetic yarns in skein form.
- Steam ovens for setting twist in synthetic yarns after twisting.
- Special type drying equipment for synthetic yarns or affiliated products in any specially processed form.

Proctor engineers are prepared to supply any type of precision processing machinery for synthetic fibers. Long association with the field has given them a thorough understanding of processing problems that will result in equipment precisely suited to your needs.

PROCTOR & SCHWARTZ - INC.

REATIVE ENGINEERS AND MANUFACTURERS OF PRECISION PROCESSING EQUIPMEN

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Rugged, effective vibration without damage to your bins and hoppers when you use the patented Peterson pneumatic VIBROLATOR. Effective all-directional vibration for moving stubborn materials in hoppers and bins. Instantly selfstarting, no lubrication or maintenance needed. A variety of sizes available to meet all applications. Whatever your vibrator requirements, there's a Peterson Vibrolator to fit the job and do it more efficiently.



When inquiring check CP 1560 on handy form, pgs. 2-3



When inquiring check CP 1561 on handy form, pgs. 2-3

NEW LITERATURE

Bulletin presents piling, loading equipment

Variety of types of loading, piling, and unloading equipment for cars and ships is presented in 24-page bulletin.

Detailed drawings, specifications, and operating charts are included for each type shown. Illustrations feature actual installation and application of loaders and pilers. A list of accessories and parts is also included.

Bul 253 is issued by Stephens-Adamson Mfg. Co., Dept. CP, Aurora, III. When inquiring specify CP 1562 on handy form, pages 2 and 3.

Gives complete info on lab planning

Informative, illustrated booklet consists of 180 pages showing an extensive line of various items needed for the modern laboratory, based on sectional and interchangeable units and covering accessories to meet every laboratory planning problem. In addition, publication gives helpful information concerning space economy, utilization of new equipment and facilities, ease and coordination of laboratory operation, location and types of plumbing and electrical facilities, ventilation, lighting, and functional design.

Cat 4B is issued by Metalab Equipment Corp., Dept. CP, Hicksville, L. I., N. Y. When inquiring specify CP 1563 on handy form, pages 2 and 3.

Handy chart lists pH test papers

An aid to pH testing is provided in a convenient chart designed for selecting the appropriate paper for testing at any point on the pH scale. Chart shows at a glance the points on the pH scale at which 20 test papers show 97 positive color changes during testing.

"Ready Reference Selector Chart" is issued on letterhead request to R. P. Cargille Laboratories, Inc., Dept. CP, 117 Liberty St., New York 6, N. Y.

The Speedline system saves money on stainless piping and increases flow and capacity



You can save money on your corrosion-resistant lines...even cut your costs in half. Speedline engineers achieve these amazing results by using the new light wall stainless pipe and versatile Speedline Fittings.

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Just write a note on your company letterhead and we will mail you the Speedline catalog. It shows why you get better results at less cost with Speedline Fittings.

Speedline distributors are located in principal cities from coast to coast

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When inquiring check CP 1564 on handy form, pgs. 2-3



how AIR POWER can speed your production jobs

Find out hered by Ing Compress, money and operations. figures ever for produ Also, the r Compresso volume of hp input.

Find out how Air Power delivered by Ingersoil-Rand Type 30 Compressors, can save time, money and man-hours in your operations. Here are facts and figures every man responsible for production should have. Also, the reasons why Type 30 Compressors give you a greater volume of compressed air per hp input.

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When inquiring check CP 1565 on handy form, pgs. 2-3

ZONE

Thermal shock is withstood by graphite chamber

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Catalog discusses graphite combustion chambers, with Karbate brand impervious graphite burner nozzles, which feature an ability to withstand thermal shock. Also emphasized are equipment's immunity to hot (uncooled) cell gases saturated with water, its long life without corrosion and with a minimum of maintenance, and its simple design which permits construction of acid systems with no moving parts.

Complete processing unit is fully illustrated and described, with detailed suggestions and recommendations for its use in the burning of wet hydrogen and chlorine gases from diaphragm cells; in the burning of "sniff gas" with wet or dry hydrogen; or in the burning or re-evaporated chlorine, dried but not compressed chlorine, or cooled but not dried chlorine from mercury cells with wet or dry hydrogen.

Dimensioned engineering drawings show construction of combustion chambers and burner nozzles. Tables of dimensional sizes and capacities are handy for ordering and operating equipment.

Cat Sec S-7530 is available from National Carbon Co., a Division of Union Carbide & Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 1566 on handy form, pages 2 and 3.

Specific temp data, efficiency ranges for insulation

Four-page folder contains condensation control charts for obtaining specific temperature data and efficiency ranges on a certain insulation. Manufacturer claims chart will show exact degree of protection from condensation which is afforded by his insulation. Charts also show the percent of relative humidity above which condensation will form on a bare surface at various surface and ambient temperatures.

Insul-Mastic Type "D" Charts are available from Insul-Mastic Corp. of America, Dept. CP, 1141 Oliver Bldg., Pittsburgh 22, Pa. When inquiring specify CP 1567 on handy form, pages 2 and 3.

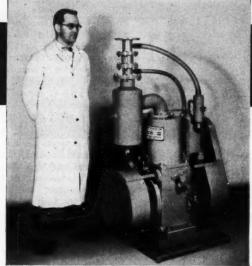
Regulating valves provide on-off or proportional control

Designed for on-off or narrow band proportional control, rotary stem regulating valves are available for lever-and-weight actuation with either plain or outboard bearing construction. Size, construction, body-temperature ratings and complete mounting dimensions are in bulletin.

Spec Sheet 423 is issued by Station 64, Minneapolis-Honeywell Regulator Co., Brown Instruments Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 1568 on handy form, pages 2 and 3.

ROTARY HIGH VACUUM PUMP USERS:

End Your Water Vapor Troubles



NRC Rotary Gas Ballast Pump — Model NRC 100M — a 2-stage pump unit

New-NRC High Vacuum Rotary Gas Ballast Pumps

- Maintains fast pump down time
- Eliminates oil reclaiming units
- Provides greater capacity under 1 mm Hg
- Requires up to 80% less oil charge
- Capacities from 11/4 cfm to 400 cfm
- Pressures down to 10-4 mm Hg

This is important news for every user of rotary vacuum pumps. At last, an "anti-water-vapor" pump that does not blank off at increasing pressures because it is trying to pump condensable vapors.

Water vapor is no problem to the new National Research Rotary Gas Ballast Pump. It operates on a principle that *prevents* the water vapor from condensing and contaminating the pump oil.

The pump is available in capacities from 11/4 cfm to 400 cfm; pressures down to 10-4

mm Hg; a full line of vane, piston-type and 2-stage pumps.

Send in the coupon today for your copy of the new bulletin that gives a full explanation of the Gas Ballast principle and complete engineering data on the construction and operation of the NRC Rotary Gas Ballast Pumps.

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Send me more facts about the NRC Rotary Gas Ballast Pump	Have your Salesman call
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Company	

Address _

When inquiring check CP 1569 on handy form, pgs. 2-3



When inquiring check CP 1570 on handy form, pgs. 2-3



Snowball pelletizing with the Sinterite® Pelletizer has proved to be the most economical method for converting fine, dry or sticky materials into pellets or nodules of uniform size and consistency. Successfully used in processing agricultural and industrial chemicals for storage, shipping, preparing mixes for dryers and kilns, and a variety of other applications.

Pellet size, consistency, strength and special requirements, such as friability properties, can be varied over a wide range by adjustment of drum speed, angle of inclination, conditioning spray and feed rate.

and feed rate.

Also available with paddle type agitation for economically producing fluffy, highly permeable, intimately mixed products.

COMPLETE TESTING LABORATORY maintained at Netcong, N. J. We will be glad to discuss your problems, test your materials and offer our recommendations to meet your requirements.

METALLURGICAL DIVISION

SINTERING MACHINERY

150 SINTER AVENUE, NETCONG, N. J.

When inquiring check CP 1571 on handy form, pgs. 2-3

NEW LITERATURE

Reports on pneumatic conveying systems

Eight-page bulletin briefly describes and illustrates many uses of pneumatic conveying systems for industry. List of materials handled by these systems ranges from abrasives to zinc oxide. Standard installations are shown and commented on.

Bul 104 is issued by Convair Corp., Dept. CP, 1501 Potomac Ave., Pittsburgh 16, Pa. When inquiring specify CP 1572 on handy form, pages 2 and 3.

Outlines useful info on titration unit

Informative, 40-page manual contains useful background information and detailed instructions for use of an electronic titration unit. Supplementary sections outline various methods of analysis which utilize the instrument for determinations ranging from chromium in steel to size on nylon yarn or oxygen in boiler feedwater.

Separate chapters include: Potentiometric titration, Installation, Care and Use of Electrodes, Standardized Solutions, pH Measurement, and Plotting of Titrimetric Curves.

To obtain "Volumetric Analysis with the Fisher Titrimeter" remit \$2 direct to Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 1573 on handy form, pages 2 and 3.

16 variations on theme of dust collectors

Two basic dynamic dust precipitators and one hydrostatic model—and 16 variations of them to meet specific dust problems—are illustrated in four-page leaflet. Set-ups shown include those for chips or abrasives, explosive dusts, and combination recovery of dry dust and slurried particles.

"16 to 1 We Can Do It!" is issued by American Air Filter Co., Inc., Dept. CP, 215 Central Ave., Louisville 8, Ky. When inquiring specify CP 1574 on convenient Reader Service slip, pages 2 and 3.



A completely revised edition of the handbook that has become the "bible" of electronic control for thousands of engineers.

Newly edited, with 45 new case studies showing how standard packaged electronic controls have solved many industrial problems you're likely to meet. It explains clearly and factually, without hocus-pocus, tested ideas for achieving efficiency through "Electron-eered" counting, weighing, measuring, timing and cycling — broadly applied to industries — completely indexed.

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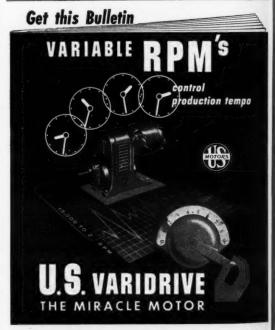
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When inquiring check CP 1575 on handy form, pgs. 2-3



With infinite variable speeds, The U. S. Varidrive Motor will boost your production, increase operator's efficiency and produce better quality work. 2 to 10,000 r.p.m. ¼ to 50 hp. Request new Bulletin.

U. S. ELECTRICAL MOTORS Inc.
Box 2058, Los Angeles 54, Calif. Milford, Conn

When inquiring check CP 1576 on handy form, pgs. 23

Rubber-phenolic molding powders minimize cracking around inserts

Large metal inserts may be molded or press-fitted in thin-walled parts without excessive cracking when using rubber-phenolic molding materials. In addition, wood flour-filled materials of this type permit easy flash removal which eliminates hand finishing usually required by impact materials.

Rubber-phenolic molding materials are available in two types of wood flour-filled powders as well as asbestos-filled, flock-filled and fabric-filled types. Composition, color, properties, uses, performance characteristics and various suggestions for processing of molding materials are given in 16-page bulletin.

Bul CDC-234 is issued by General Electric Co., Chemical Div., Dept. CP, 1 Plastics Ave., Pitts-field, Mass. When inquiring specify CP 1577 on handy form, pages 2 and 3.

Ozone oxidation process yields azelaic acid

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Bulletin.

Azelaic acid, a mixture of saturated aliphatic dibasic acids with the C₉ azelaic acid predominating, is a product of ozone oxidation of oleic acid. Mixture also contains about 10% of the C₁₁ acid. Material may be used in preparation of metallic soaps, soft alkyd resins and plasticizers.

Formula and properties, reactions, specifications, and typical composition for the product are outlined in 4-page bulletin. Typical applications are also suggested.

Bul 40 is issued by Dept. 5, Emery Industries, Inc., Dept. CP, Carew Tower, Cincinnati 2, Ohio. When inquiring specify CP 1578 on handy form, pages 2 and 3.

Production estimates for 1955, 1975 of synthetic organic chemicals

Assembled from the five-volume report of the Material Policies Commission, 16-page booklet gives estimates of production for 1955 and 1975 of synthetic organic chemicals.

Material is presented in 18 tables which compare estimated production and use figures for many chemicals and chemical groups in 1955 and 1975 to actual production and use figures in 1950. Products include coal tar crudes, benzene, napthalene, cyclic intermediates, cresols and cresylic acids, phenol, phthalic anhydride, styrene, cyclic end products, petrochemical crudes, ethylene, acetylene, methane, medicinals, plastic materials, and synthetic fibers.

Bul 15301 is available from R. S. Aries and Assoc., Dept. CP, 400 Madison Ave., New York 17, N. Y. When inquiring specify CP 1579 on convenient Reader Service slip, pages two and three.



HERE ARE A FEW OF THE PRODUCTS WE'VE TESTED IN OUR LABORATORY FOR MORE EFFICIENT DRYING

FROM ABRASIVES TO YARNS

Flock Plastics raw stock Abrasives Printing Inks Apples Flour Fruits **Proteins** Asbestos Pulp Grain (cooling) **Bast Fibres** Rice Beans Hides Rubber-reclaimed, Bristles Hair synthetic and natural Kaolin **Building Materials** Salt Calcium Carbonate Latex Sawdust Chamicals Macaroni Sisal Clay Fillers for paper Metal Parts and Synthetic Fibres Products Cloth Textiles-raw and dyed Coatings Nuts stock **Paints** Coconut Paper & Paper Products Tobacco Cotton Waste Sludges Peanuts **Dehydrated Foods** Explosives Peat Moss Wool Yarns **Fertilizers Pigments**

OUESTIONS ABOUT THE DRYING OF YOUR PRODUCT?

 Is it dried uniformly, to exact degree desired under complete control at every stage?

 Are you getting maximum rate of production possible, yet maintaining automatically controlled, unvarying quality?

3. Is your drying process the most efficient possible — quality-wise, AND cost-wise? No steam or hot dry air waste? Using minimum floor area? And optimum bed depth? Would alternate airflow direction zones halp, or radiant heat boosters, or varying temperature zones?

4. Is your product correctly pre-conditioned for most afficient drying? Have you ever compared drying curves to be certain that every important variable is controlled within pre-set limits—automatically?

5. Which type of dryer is best for your product — tunnel, pole, tray, truck, or special design?

SARGENT can give you the answers to these and many other questions. For better, less costly, more efficient operation of drying processes, write us.



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When inquiring check CP 1580 on handy form, pgs. 2-3

Two Direct Fired Dryers.

DAVENPORT

De-watering Press-

ROTARY

Steam Tube, Hot

Air and Direct Fire

Water Tube and

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Air Coolers.

es and Screens.

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If your product is not critical to high temperatures, you can dry it more economically in a Davenport Rotary flash or direct fired dryer. Let Davenport engineers assist you. Write for our complete catalog.

DAVENPORT MACHINE and FOUNDRY COMPANY DAVENPORT 4.

For quick reference see "Sweet's 1952 Processing Industries" file or "Chemical Engineering Catalog" — 1953.

When inquiring check CP 1581 on handy form, pgs. 2-3

Announcing ...

... the Compact signal alarm unit ideal for flow line and graphic panels!

Monolarm offers instant warning against any abnormality occurring in a processing operation. Should any abnormality occur the normal light ceases to shine...the alarm light flashes rapidly on and off...also an external howler, if used, is sounded. Acknowledgment by the operator must be made by turning the re-set switch . . . the alarm light then assumes a steady state until the condition is remedied ... then Monolarm automatically resumes its normal indication.
• Write for Sales Data Sheet # 21253 — 30.

Matching pilot light with Monolarm for continuity of panel appear-ance.

Advantages of R&S MONOLARM

- button fits into a flow or graphic line diagram without interrupting the continuity of the design story.

 bezel.

 4. Relamping is quick and easy from the front of the panel.
- 2. Occupies minimum back-of-panel mounting space.

1. A single narrow bezel and two or three colors on one switch receptacle and plug.

5. Instantaneous connect 7. Time delay circuit availand disconnect of the power able to counteract turbulence 3. Lighting indications in provided by an interlocking condition is reached.

6. Hermetically sealed plug-relays instantly removable if replacement is necessary.

RUSSELL & STOLL COMPANY, INC. . 125 BARCLAY STREET, NEW YORK 7, N.Y.

When inquiring check CP 1582 on handy form, pgs. 2-3

NEW LITERATURE

Tells metal abrasives and powders story

Divided into four sections, 250page book is a description of metal abrasives, metal pigments and metal powders. First section presents information on the issuing company's activities. Next section describes particular applications of shot and grit and their production.

Third section covers the manufacture, evaluation and applications of metal pigments, along with numerous illustrations. Last section examines the making, testing and use of metal powders. Many phases of powder metallurgy are detailed.

"MD Blue Book" is available without cost to personnel actively concerned with the purchase or specifying of such To those who do products. not so qualify, it may be obtained by remitting \$5 direct to Metals Disintegrating Company, Inc., Dept. CP, Elizabeth B, N. J. When inquiring specify CP 1583 on handy form, pages 2 and 3.

Walkie features outlined, hand trucks, too

Four-page bulletin briefly describes manufacturer's Model RKL-960 and Model POK-11-60 spring frame trucks, hand and electrically operated, respectively. Dimensions, capacities, and operating features are listed.

Another piece of equipment, highlighted in a separate bulletin, is an electro-hydraulic operated mobile truck designed for raising a non-tilt platform to 12'8" height for maintenance purposes. Called the Lift-A-Loft, the device has a capacity of 500 lb, and has lift and platform pushbutton controls which are mounted on the platform railing.

Bul CP 478 describing the Model RKL-960, POK-11-60, and bulletin describing the Lift-A-Loft are issued by the Barrett-Cravens Co., Dept. CP, 4613 S. Western Ave., Chicago 9, Ill. When inquiring specify CP 1584 on handy form, pages 2 and 3.

NATIONAL AIROIL FUEL OIL GAS BURNERS

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 Valves, Strainers, Furnace Window

Detailed information gladly sent you upo

Automatic Oil Burners for Homes, Churches, Apartment Houses, Factory **Buildings and Office Buildings.**

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incorporated 1917

NATIONAL AIROIL BURNER CO., INC.

1300 EAST SEDGLEY AVE., PHILADELPHIA 34, PA. Southwestern Division: 2512 SOUTH BOULEVARD, HOUSTON 6, TEXAS

When inquiring check CP 1585 on handy form, pgs. 2-3

VARIABLE PARTICLE SIZE DISTRIBUTION



When inquiring check CP 1586 on handy form, pgs. 2-3

Safety Program

JSTRY

YEARS

INC.

pgs. 2-3

(Continued from page 5)

and all the benefits worth attaining. Show me a plant with bad housekeeping and I will show you a plant with a bad safety record. Good housekeeping is essential to a good safety program.

Analysis of the cause of an accident is another vital factor in any safety program. At Davison, an accident of any importance is immediately reported to us; and we follow through in handling and study-ing the consequences of the accident. This in no sense reflects on the abilities of the men who are charged with administration of the safety program. It is our way of backing them up. It also reflects our belief that production and even safety men tend to be so close to their problems that they may overlook factors that are apparent to men more remote from the details of operation. The old story of not seeing the forest for the trees may apply to supervisors and plant managers, as well as research and development men. Furthermore, it is a function of top management to look ahead, to anticipate changed conditions and needs, and to make plans accordingly.

This is difficult for men charged with details to do. Backing our safety men extends to granting them veto power over projects that are the responsibilities of other departments - even top management itself. When planning new plants, processes, methods, machinery, etc, there is a close scrutiny of them from the safety point of view. Detection of a health or accident hazard will send the plans back to the initiating department for further work and study.

However, the ultimate test of whether a safety program is working is to be found in the attitude of everyone in the company, from the president on down. I am reminded of an incident that occurred at a safety award ceremony, when a photographer was perched on a rather high ladder, taking pictures. A man had been assigned to the ladder to make sure it was held firm and level. A guest observed jokingly to the guard - "It would make a good story if that camera man fell and broke a leg while taking pictures of a safety meeting." The guard was not amused; and replied unsmilingly, "If that happened I would lose my job."

Now I doubt if he would have been discharged if he had not been at fault in the hypothetical accident. But the real point of the story is that the down-toearth seriousness of the safety program had registered firmly in that man's consciousness. This is only one example of safety at work, but top management must approach working safety just as seriously as the man assigned to the ladder. Only by recognizing the value and seriousness of safety can we fulfill our part in the community; and at the same time, adhere to the precepts of good business.

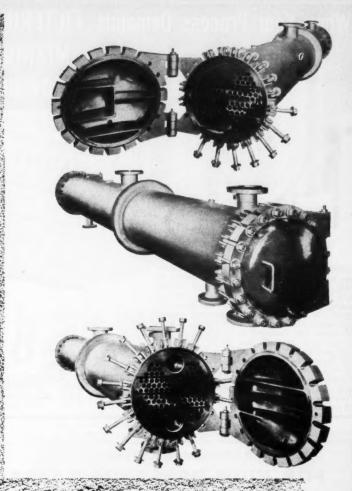
> Handy Nomograph on page 208 provides quick solution to size of horizontal cylindrical process tanks.



problem

Pasteurizing fruit and vegetable juice in continuous flow is another way p-k special purpose heat exchange equipment is being used.

All parts of this unit which are in contact with the juices being processed are of stainless steel construction. It opens at both ends for easy, clinical cleaning. Uses six tube-side juice passes for efficient heat transfer. Materials, design details and finish conform to ASME and the most rigid sanitary standards. Here is another typical example of p-k thermal engineering and mechanical design.





Will standard equipment meet your needs?

able special purpose heat exchangers standard p-k heat exchangers may for years. This engineering and fab- be your answer. If you can use standricating experience works to your ard units, available in many sizes advantage when you ask p-k for and types of shell and tube arrangeideas on heat exchange problems. ments, you can save on delivery Your process may require special time and engineering costs.

p-k has designed and built depend- equipment, but, on the other hand,

First step is to write now for Catalog No. 12 which provides all essential engineering data on heat exchangers and other processing equipment





the Patterson-Kelley Co., Inc.

750 Lackawanna Ave., East Stroudsburg, Pa.

101 Park Avenus, New York 17 . Railway Exchange Building, Chicago 4 . 1700 Walnur Street, Philadelphia 3 . 96-A Huntington Avenus, Beston 16 . and other principal cities

When inquiring check CP 1587 on handy form, pgs. 2-3

When Your Process Demands FILTERING MIXING STORING



Regardless of the size or type of your installation, whatever your process may be, there's an Alsop Filter, Mixer and Storage and Mixing Tank to "fit your Job", you can be sure of getting from Alsop the right unit properly applied — you can depend on Alsop proved performance features. Alsop Filters, Mixers and Tanks are available in a complete range of sizes and capacities and Alsop Equipment is custom fitted to your application by engineers who have thorough experience in Filtration and Agitation. Look for the proved features and the benefits that Alsop Filters, Mixers and Tanks can bring to your processing operations. Write for full information, recommendations

and quotations.

PROVED, LOW-COST OPERATION
EASY TO CLEAN
DEPENDABLE, TROUBLE-FREE
PERFORMANCE
ALL SIZES AND CAPACITIES
LOW UPKEEP



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When inquiring check CP 1588 on handy form, pgs. 2-3

HARRISBURG CYLINDERS FOR HIGH-PRESSURE GASES

NEED CYLINDERS?

CYLINDER PROBLEM?

CONSULT

HARRISBURG STEEL!

It's only natural...the biggest producer builds them best. In a complete range of sizes and capacities from 14 to 400 cubic feet...in both Domestic and Export types... to I.C.C. Specifications... for storage and transportation of fixed, liquid, and medical gases. If you need cylinders or have a technical problem concerning cylinders... consult us. Or write for a Catalog and prices... today.







When inquiring check CP 1589 on handy form, pgs. 2-3

NEW LITERATURE

Covers tube mills in 12 pages

Illustrated 12-page bulletin describes pebble and ball tube mills intended primarily for grinding to a high-superfine content, or for grinding two or more materials together. Photographs and drawings show component parts of the units, and picture them in operation. Tables list specifications for the mills, including maximum ball load and horsepower needed to run. Last two pages are devoted to auxiliary equipment such as feeders, grinding controls, and classifiers. Bul 18-B is issued

by Hardinge Company, Incor-

porated, Dept. CP, 240 Arch St., York, Pa. When inquiring

specify CP 1590 on handy form,

Plastics deflashing by airless blast

pages 2 and 3.

Six-page, profusely illustrated bulletin describes airless blasting equipment and process as applied to deflashing thermosetting plastics and to deburring of certain laminated plastics. Case histories show savings various companies have made by deflashing by this method, which uses soft grit pellets. Photographs compare pieces before and after deflashing.

Bul 934 is issued by American Wheelabrator & Equipment Corp., Dept. CP, Mishawaka, Ind. When inquiring specify CP 1591 on handy form, pages two and three.

Thermal data from lignite gasification

Thermal data taken from tests conducted at the Bureau of Mines lignite-gasification plant at Grand Forks, N. Dak., are reviewed and correlated in report. Comprehensive tables and several graphs are included.

Report of Investigation 4957, "Thermal Requirements for the Gasification of Lignite in an Externally Heated Retort," is issued by the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pennsylvania.



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AIR CURTAINS ... LIQUID REMOVING HEAT TREATING ... SCALE BLOWING COOLING... SPRAYING... AGITATION TESTING ... DRYING ... VENTILATING HEAT TREATING

These and other applications are described in the Spencer Turbo-Compressor Data Book No. 107-C. Yours for the asking.



When inquiring check CP 1592 on handy form, pgs. 2-3



- No loss of precious solutions.
- Stainless Steel (316) or Hastalloy Pump and Fittings.
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When inquiring check CP 1593 on handy form, pgs. 2-3

Mechanical seal rotates with shaft

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Stone

Twelve-page, 3-color bulletin reports on mechanical seal engineered to rotate with shaft. Recommended uses and specifications are illustrated and described. Rotary mechanical seal presents these features: rotates with shaft; resists corrosion; seals gritty or abrasive fluids; no scoring of shafts; no sleeves needed; greatly reduces fire hazard.

Form 455 is issued by Durametallic Corp., Dept. CP, 2104 Factory St., Kalamazoo 24 F, Mich. When inquiring specify CP 1594, pgs. 2 & 3.

Discusses methods for comparative evaluation of paint bonding

Twelve-page folder describes methods used for comparing paint-bonding characteristics of four types of phosphate pre-treatments on steel. Article discusses tests for profile, stripping weight, and actual paint-bonding effect after prolonged salt-fog exposure. It evaluates results obtained for each of pre-treatments used.

Form 8779 is available by remitting 35c direct to Office of Information Services, New York University, Dept. CP, University Heights, New York 53, New York.

Non-skid surface obtained by chemical in floor covering

Six-page technical data bulletin is descriptive of prismatic crystalline mineral recently added to company's floor resurfacing and repair material. Its irregularly shaped crystals are said to form an unusually hard, non-skid floor surface.

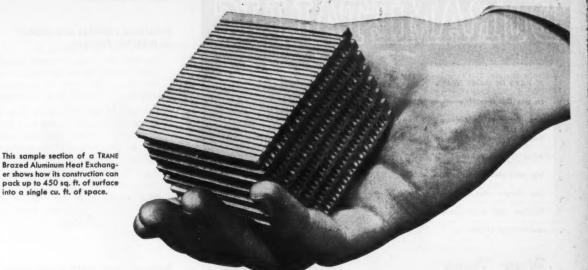
Bul 62-8 is available from The Monroe Company, Inc., Dept. CP, 10703 Quebec Ave., Cleveland 6, Ohio. When inquiring specify CP 1595 on handy form, pages 2 and 3.

Krilium

(Continued from page 7)

will be applied in commercial farming stands to reason. Growing food demands for an increasing population will make use of conditioners both profitable and necessary. In the first place, crop yields in soil of marginal value can be increased 30, 50, or as much as 100 per cent. Even more important, tests indicate that Krilium can make some soils productive even though they are "sterile" without it. Some at the alkaline-saline soils of our Southwest are promising examples of this group.

The real significance of soil conditioners will be shown in years to come. These men — Drs. Thomas, Hochwalt, Mowry, Hedrick, Quastel, Sherwood, Fordyce, and others — have stepped into a whole new area of applied chemistry and have given us a new tool for the work which is as old as civilization.



Is this your key to a new product or process?

New TRANE Brazed Aluminum Surface makes NEW products and processes not only possible...but practical. Here's why:

- 1. Wider range of core sizes and shapes.
- 2. Greater variety of surfaces.
- Almost unlimited design flexibility.
 Up to 9 times more surface for the heat
- 4. Up to 9 times more surface for the heat exchange job than with conventional 34" shell-and-tube construction.
- Light weight. Yet takes test pressures up to 1,000 lbs. per sq. inch and temperatures from -300° to 500° F.
- 6. Can handle 5 fluids or more at one time.
- Can produce more heat transfer in ¼ the space, with ⅓ the weight.

What's your heat transfer problem? Liquid-to-liquid, gas-to-gas, liquid-to-gas? Condensing and vaporizing fluids? You may find a new and better solution in this new kind of all-aluminum heat transfer surface . . . developed by Trans.



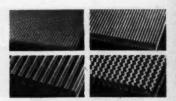
Write on your company letterhead for your FREE copy of "Extended Surface Heat Transfer Equipment."



Onlarge or small jobs, Trane Brazed Aluminum Heat Exchangers can solve almost any heat transfer problem. Multiple-core units can be furnished. You can get temperature approaches of 5° to 10° F.



Design flexibility makes possible heat exchangers in many shapes... and in sizes up to 106' in length, with either bolt-on or integrally welded headers. For longer flow lengths, cores can be welded together in series.



Select the surface you need. Straight and continuous, serrated, herringbone or perforated. Height, thickness and finspacing also can be varied to meet required heat transfer and pressure drop performance.



Handle up to 5 fluids or gases, even more, at once. This symbolic drawing shows how. If your job requires one stream or many—high or low temperatures or pressures—solve it with Trank Brazed Aluminum Heat Exchangers.

More heat exchange . . . closer temperature approaches

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When inquiring check CP 1596 on handy form, pgs. 2-3



When inquiring check CP 1597 on handy form, pgs. 2-3

NEW LITERATURE

Odorless vehicles are useful in interior finishes

As part of a trend toward odorless interior finishes, manufacturer introduces 4 odorless vehicles for use in this type of formulation. Three are copolymers, fourth is an all-vegetable limed oil. Informative bulletin offers data on physical and chemical constants as well as a discussion of odors, deodorants, driers, reactivity and compatibility. In addition, several formulations are given which indicate applications for vehicles.

Tech Bul No. 97 is issued by Archer-Daniels-Midland Co., Dept. CP, 600 Roanoke Bldg., Minneapolis 2, Minn. When inquiring specify CP 1598 on handy form, pages 2 and 3.

Reviews applications and specs of industrial insulation

Detailed specifications for oil refinery and chemical process plant equipment requiring thermal insulation are presented in this well-illustrated, 52-page brochure. Insulation specs are divided into four main sections: (1) insulations for temperatures above 100°F; (2) insulations for temperatures below 100°F; (3) tank insulations; (4) oil heater insulations.

Brochure includes seven tables of insulation thickness recommendations. Many details of recommended methods of applying insulations are also covered. Bul IN-128A is issued by Johns-Manville, Dept. CP, 22 E. 40th St., New York 16, N. Y. When inquiring specify CP 1599 on handy form, pages 2 and 3.

Illustrates wiring diagrams for starting switches

Twenty-four-page wiring diagram bulletin describes many ways in which company's AC across-the-line starter can be applied. Each wiring system in bulletin is shown in two ways: by "wiring diagram" and by "line diagram."

Wiring diagrams include all devices in the system and show their physical relation to each other. All poles, terminals, coils, and wires are shown in their proper place on each device. Diagrams are helpful in wiring up systems because connections can be made exactly as illustrated.

Line diagram is a representation of system, showing everything in the simplest way. All connections are made in such a manner that functioning of various devices can be most readily followed visually. Wiring diagrams are illustrated for all sizes of starters; 1, 2, and 3-phase systems; jogging; two-wire control; pump operation; thermostat control; sequence control; and many others.

Bul "Wiring Diagrams for Bulletin 709" is issued by Allen-Bradley Co., Dept. CP, 118 W. Greenfield Ave., Milwaukee 4, Wis. When inquiring specify CP 1600 on handy form, pages 2 and 3.

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When inquiring check CP 1601 on handy form, pgs. 2-3

Convention & Exhibit Schedule

1953

- May 14-23. International Petroleum Exposition, 30th Anniversary, Tulsa, Oklahoma.
- May 17-21. American Warehousemen's Assn., 62nd annual meeting, Shoreham Hotel, Washington, District of Columbia.
- May 18-22. The Material Handling Institute, Inc., Fifth National Materials Handling Exposition, Convention Hall, Philadelphia, Pa.
- May 19-22. Electrical Manufacturer's Representatives Association of Michigan, Inc., Electrical Exhibition, Michigan State Fair Grounds, Detroit, Michigan.
- May 20-21. Society of Photographic Engineers, Third Annual Conference, U. S. Hotel Thayer, West Point, New York.

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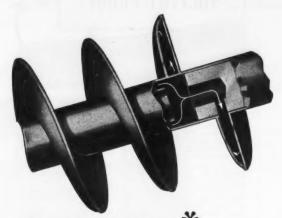
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- June 15-17. The National Fertilizer Association, 28th annual convention, Greenbrier Hotel, White Sulphur Springs, West Virginia.
- June 15-19. Exposition of Basic Materials for Industry, Grand Central Palace, New York, N. Y.
- June 16-19. American Welding Society, Welding & Allied Industry Exposition, Shamrock Hotel, Houston, Tex.
- June 22-July 3. Massachusetts Institute of Technology, summer session on feedback control systems, Cambridge 39, Massachusetts.
- June 29-July 3. American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall, Atlantic City, New Jersey.
- Aug. 31-Sept. 1. Natural Resources Research Institute, University of Wyoming, third biennial briquetting conference, Banff Springs Hotel, Alberta, Canada.
- Sept. 6-11. American Chemical Society, 124th National Meeting, Chicago, Ill.
- Sept. 13-16. American Institute of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, Calif.
- Sept. 17-19. American Association of Textile Chemists and Colorists, annual convention, Conrad Hilton Hotel, Chicago, Ill.
- Oct. 19-23. National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill.
- Sept. 21-25. Instrument Society of America, Eighth National Instrument Conference and Exhibit, Chicago, Illinois.
- Oct. 26-27. National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.
- Oct. 27. Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.
- Nov. 2-4. American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.
- Dec. 13-16. American Institute of Chemical Engineers, Annual Meeting, St. Louis, Mo.

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When inquiring check CP 1602 on handy form, pgs. 2-3



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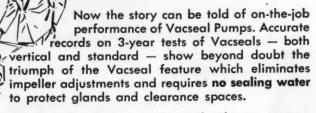


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PROCESSES, EQUIPMENT and MATERIALS



Use this "quick-locator" when you want informa-tion on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you-information comes to you direct.

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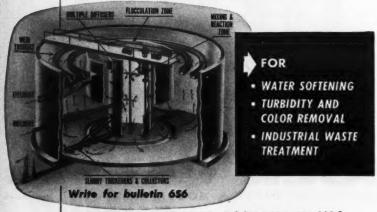
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CMH corrugated hose is available with metal braid covering or unbraided in steel, bronze or stainless steel. Used where great flexibility is required at high temperatures and high pressures. Sizes range from 3/4" I.D. to 24" I.D. Depending on size, type and material, it will handle burst pressures to 12,000 psi, temperatures to 1200° F.

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CMH double groove (ball bearing design) hose is available in bronze, steel or stainless steel with asbestos packing and with or without metal braid covering. Widely used for non-searching liquids and gases at low to moderate pressures and temperatures. Sizes range from ½" to 1¼",

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CMH square locked hose is available unpacked or with a choice of several types of packing in steel, bronze, brass, aluminum, stainless steel, etc. It is used as conduit, cable armor, nozzles and many similar applications. Sizes range from 3/6" to 1", I.D. Normally used only at very low pressures.





For full information on all CMH bose products write for Catalog 130 or see the Flexonics catalogs in Sweet's Plant Engineering File, Chemical Engineering Cat-alog and The Refinery Catalog. For maintenance hose, see the classified pages of your telephone directory for the name of your CMH distributor.

Standard assemblies and special purpose flexible metal hose items are manufactured for such services as steam, tar and asphalt, machine tool coolants, machine tool wiring conduit, dry granular prod-ucts. We will be pleased to send data on any specific requirement.





Flexon identifies CMH products that have served industry for over 50 years.



CHICAGO METAL HOSE Division

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In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario



Expansion joints.



Metallic bellows and bellows assemblies



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W. S. ROCKWELL COMPANY

BUTTERFLY VALVES . SLIDE VALVES . AUTOMATIC VALVES

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Sales Representatives in Principal Cities

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Company



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prove time and again to give maximum output with highest quality grinding or dispersion results.

The ease of operation, increased production features, and rugged construction of ROSS mills are worth investigating to see why ROSS is the leading mill in plants throughout the country.

Compare these features built into every ROSS Mill:

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CP 1620

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All regular employes of the International Mineral & Chemical Corp., who have one year of continuous service, are eligible to apply for assistance in paying for collegiate, professional, or semi-professional education relating to the fundamentals of their work. Under the plan, the company will pay half of their tuition, registration, and laboratory fees for such courses in accredited institutions. Individuals taking graduate or advanced college level courses will also be allowed time off to attend classes—up to six hours a week without loss of pay.

Better tasting diets

Concentrated nutrients for use before and after surgery and for shorting convalescence from injury and disease have been made by a new method announced at the 123rd national meeting of the American Chemical Society. The better tasting therapeutic diets have been produced by a mild chemical treatment that avoids the formation of bitter, unpleasant tastes, and at the same time preserves the essential nutrient tryptophane (easily decomposed protein ingredient which was destroyed by the older strong-acid method). Designed for direct injections into the blood stream, as well as for oral administration, the high-energy preparations are made from casein, egg albumin, and other similar protein-rich materials by breaking them down chemically with sulfur dioxide.

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For more information on product at right, specify CP 1621
. . . see information request blank between pages 2 - 3.

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seven ways better

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